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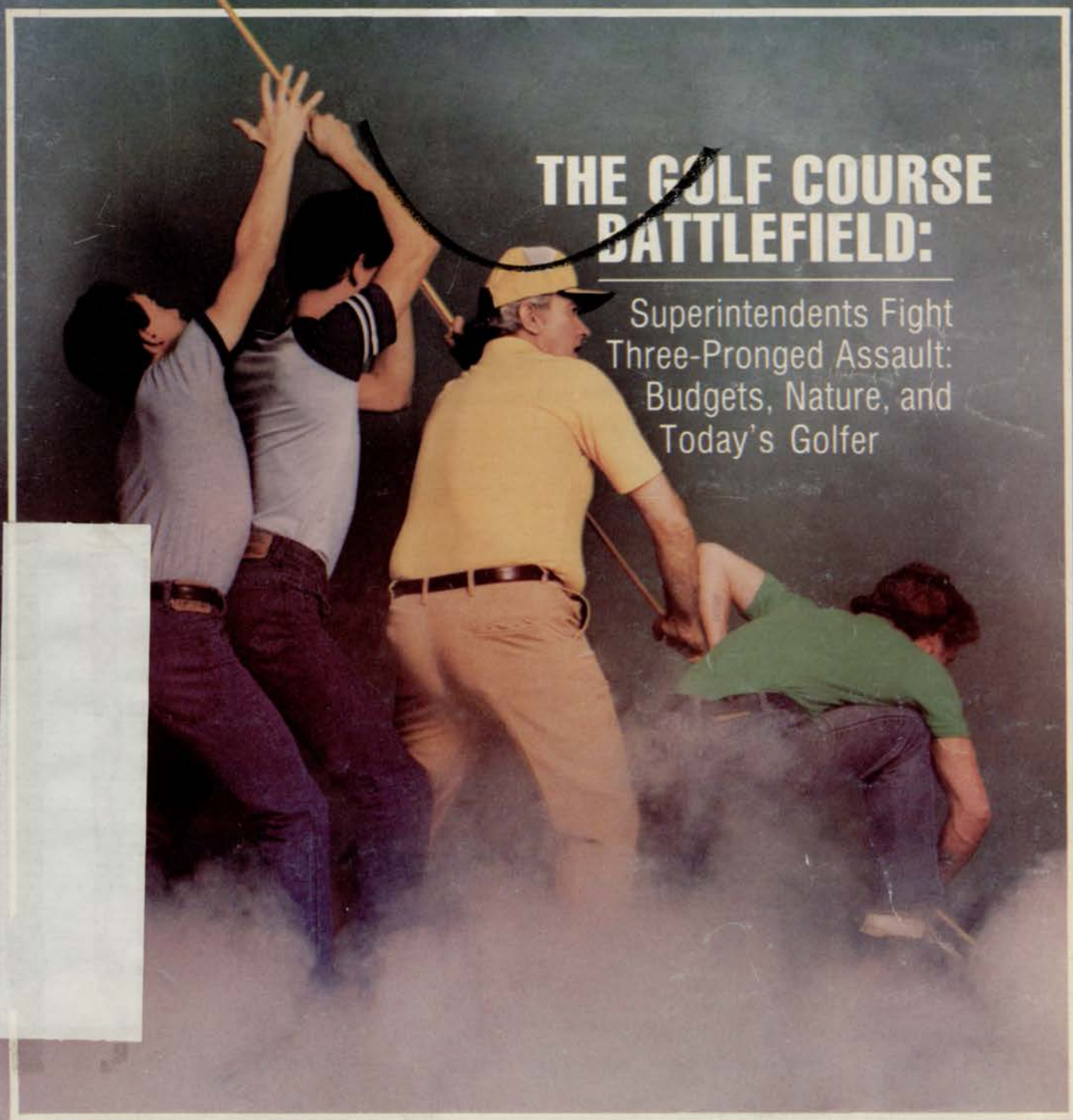
JANUARY 1985/$2.00

WEEDS TREES & TURF

The Magazine of Landscape and Golf Course Management Since 1962

Improved Bentgrasses by Penn State's Duich

1985 Golf Superintendents' Show Issue



THE GOLF COURSE BATTLEFIELD:

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JANUARY, 1985 VOLUME 24, NUMBER 1

WEEDS TREES & TURF

The Magazine of Landscape and Golf Course Management Since 1962

30 Stadium Golf: Here to Stay

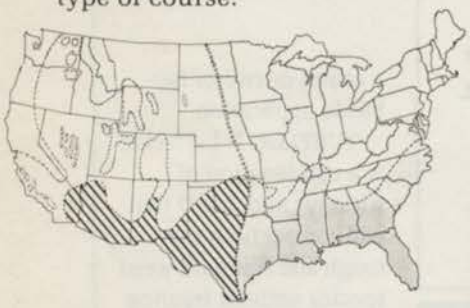
Stadium golf is more than a passing fad. In fact, the PGA says it's getting a tremendous reaction. Spectators are flocking to the grass-covered bleachers at courses across the country.

66 Eagle Trace: A Pampered Champ

Fred Klauk Jr. keeps this Florida course tournament ready 365 days a year.

36 Winning an Uphill Battle

WT&T publishes the first specialized data on golf course maintenance by location and type of course.



44 A Gold Mine in the Desert

Palm Springs is one of the richest golfing areas in the world—in many ways. WT&T takes a look at some of its prestigious courses and the supers who keep them that way.

52 Yankee Ingenuity on Cape Cod

Dennis Highlands blends the charm of St. Andrews with the playability of America's premier courses. An example of the best of both worlds.

72 Bentgrass: No Newcomer to American Turf

Dr. J.M Duich of Penn State gives an incisive overview of the bent grasses.

80 Selecting Trees for Golf Courses

Four groups of trees are well-suited for use on golf courses. Doug Chapman of Dow Gardens connects trees to golf course sites.

90 One-two Punch for Fairway Poa

A combination of plant growth regulators and overseeding give northern superintendents new hope in taming annual bluegrass in fairways.

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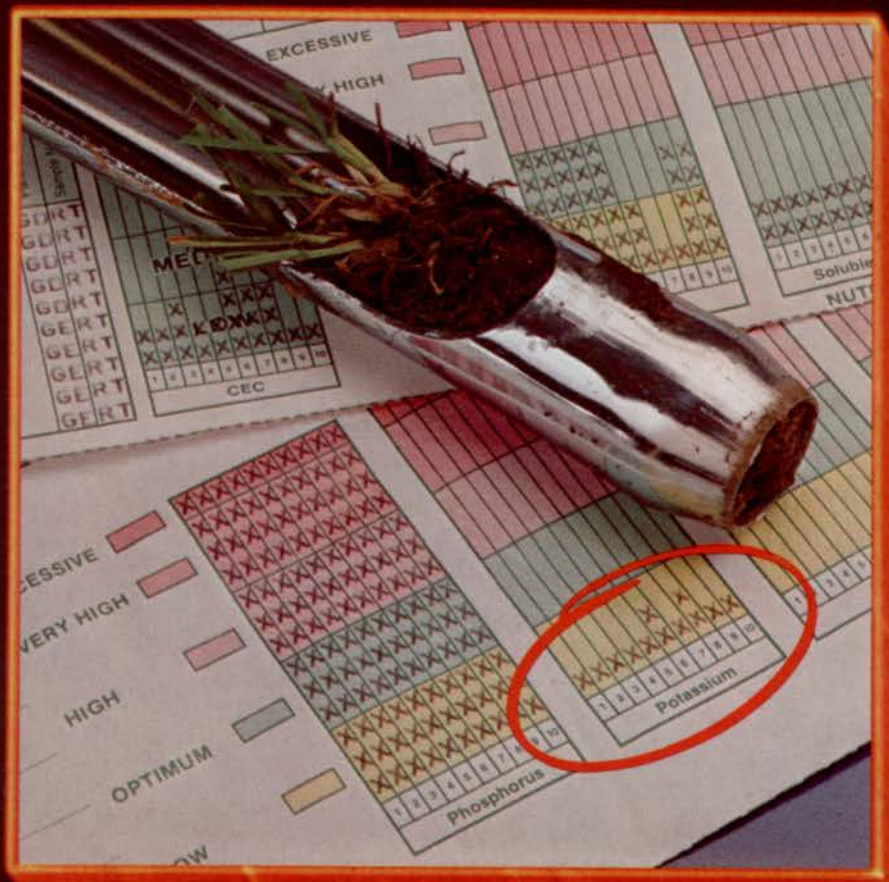

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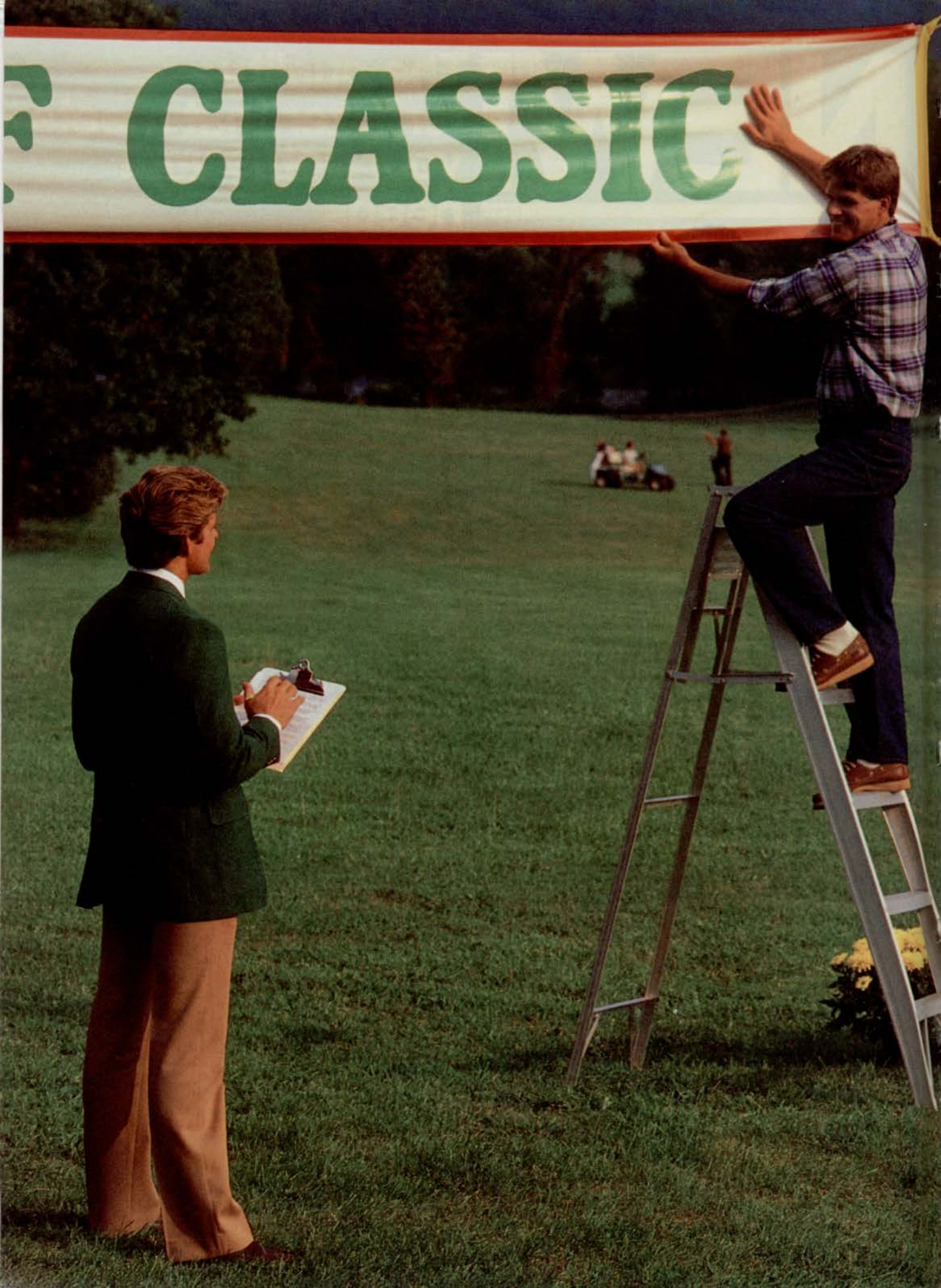
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The first name in herbicides

At Union Carbide, we were the first to develop the phenoxy herbicide chemistry turf pros have depended on for nearly 40 years. And, with formulations like WEEDONE® brand DPC we're still working to help make turf weeds the least of your worries.

This year, ask your turf chemical supplier for WEEDONE® brand DPC broadleaf herbicide. And enjoy the tournament.

From the turf care group at Union Carbide

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LESCO Adds Chain of Stores on Top of Trucks in Florida

Jim Fitzgibbon and Bob Burkardt, two men who have shocked the distribution world more than once at LESCO, are set to do it again this month when they open the first two of a chain of wholesale stores in Boca Raton and Fort Lauderdale, FL.

"The goal is 20 or more stores in the South as soon as possible," boasts Scott Sincerbeau one of two regional managers for the new chain of stores. Heading up the new operation is Frank Kollath in the company's Rocky River, OH, headquarters.

"Each store will have inventories available for purchase and immediate pickup," Sincerbeau told *Weeds Trees & Turf* during the Lawn Care Show in Tampa in November. Everything keeps working as before, the trucks and phone order service, but the stores will reinforce sales and service in key cities where a little extra is needed." LESCO also has manufacturing facilities in Florida.

LESCO broke territorial limitations of distribution with its trucks in 1976 . The trailor truck showrooms comb 20 states visiting golf courses, nurseries, and landscape maintenance companies. The person driving the truck is usually a college-educated agronomist capable of making recomendations and solving plant problems. "The truck showroom was really not our idea," says Fitzgibbon, "but we were the ones to make it successful."

The chain of wholesale outlets was not LESCO's idea either, a California company called Orion tried unsuccessfully to start a similar chain of stores two years ago. But Fitzgibbon and Burkhardt seem to get inspired by trying where others fail. If the stores are as successful as the trucks have been, the professional landscape manager's supermarket has been born.

Overseeding Is Growing Up

A drive through Scottsdale, AZ, is enough to convince any skeptic that overseeding has caught on big. We're not just talking about the plush golf courses. We are talking about parks and roadsides, resorts, condominium landscapes, and more and more single-family homes. The bright green perennial ryegrass is an impressive contrast to the dull grey and tan of dormant warm-season turf.

At the same time a bunch of golf course superintendents in Wisconsin, and a few in Canada, have learned the trick to keeping annual bluegrass off moist, clay fairways. By using growth regulators to stunt the poa, ryegrass and bent seed have time to get established and eventually pushing out the poa. Northrup King's ryegrass sales quadrupled this year says NK's Marc Grundman.

As the practice of overseeding to crowd out poa is discovered by more northern U.S. and Canadian superintendents, seed sales should take a big jump.

WT&T

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Wide cutting path takes on the big jobs.

Maneuverability to reach tight cutting areas.

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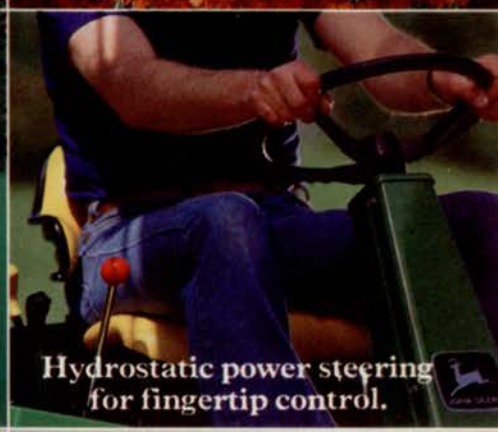

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Pop-up hood for easy access and maintenance.

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THE FRONT

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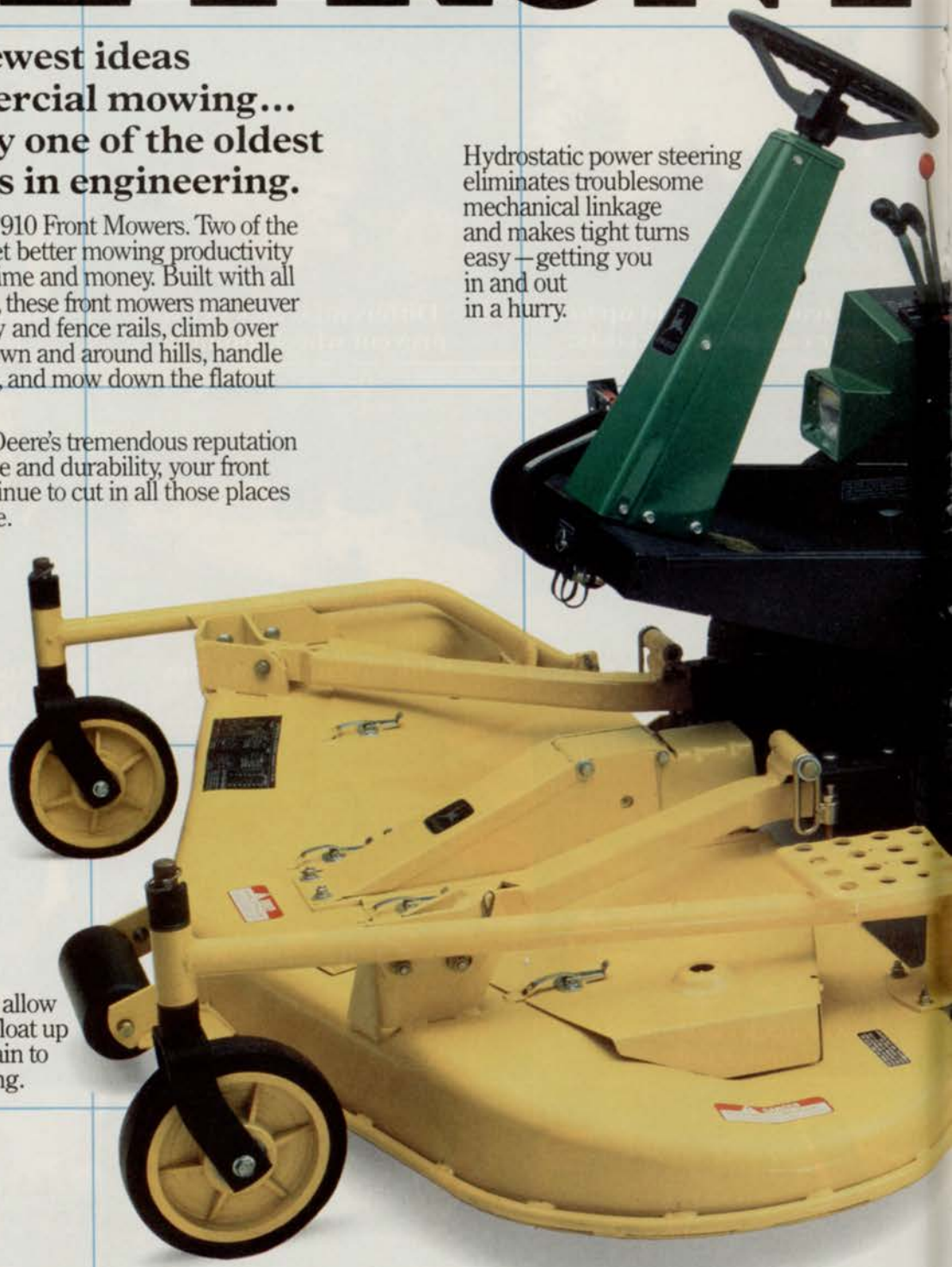
The F930 and F910 Front Mowers. Two of the surest ways to get better mowing productivity while you save time and money. Built with all the newest ideas, these front mowers maneuver under shrubbery and fence rails, climb over curbs, cut up, down and around hills, handle dips and bumps, and mow down the flatout straightaway.

And with John Deere's tremendous reputation for dealer service and durability, your front mower will continue to cut in all those places for years to come.

Hydrostatic power steering eliminates troublesome mechanical linkage and makes tight turns easy—getting you in and out in a hurry.



Dual hydraulic lift cylinders allow the mowing deck to tilt and float up to 12 inches over rough terrain to avoid turf gouging or scalping.

The mowing deck raises 8 inches to clear most curbs without the need for a ramp or driveway.

MOWERS.

Driver's area is designed for comfort and efficiency—with a high-back driver's seat and two-position footrest to reduce fatigue, and easy-to-reach controls while you ride.

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Differential lock on the F930 distributes power evenly to prevent wheel-spinning slippage on slopes and provides better straight-line traction—especially on wet grass.

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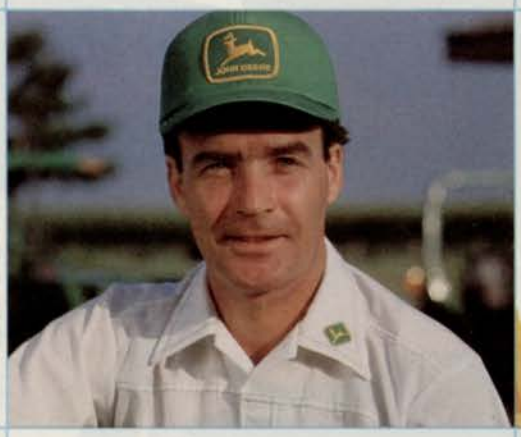

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ASSOCIATIONS

STMA vows stronger sports turf push

The Sports Turf Managers Association (STMA), in an effort to bolster membership and take a stronger stand in the promotion of natural grass athletic fields, named Dr. Kent Kurtz to the post of executive secretary. The appointment of Dr. Kurtz, professor of horticulture at Cal Poly, Pomona, CA, and field consultant, took place at the STMA Conference in Denver recently.

"Our biggest accomplishment at the meeting was the structuring of a goal," STMA President Dave Frey, tells *WT&T*. "Our goal has always been the promotion of natural grass athletic fields and their proper care, but we now have a structure which we feel we can work with to accomplish this."

Members of the STMA board agreed to begin gathering lists of prospective members in preparation for a more vigorous drive for members and recognition in the turf world.

Frey added that the STMA is also considering asking for research grants in its efforts to improve turf playing surfaces nationwide.

"The intent of the STMA has not changed whatsoever," Vice President Mike Schiller, superintendent Northbrook, IL, parks, adds, "but our executive offices have been separated and now we have to make more of an effort to make this a more valuable organization."

Schiller emphasizes that although the organization boasts some of the top stadium grounds superintendents in the nation as members, it provides information and services that are vital to parks and playground supervisors as well.

In line with the more aggressive posture by the STMA, newsletters and other correspondence are being prepared and should be distributed to members in early 1985.

Speaking at the STMA conference were Dr. James Watson of Toro, Dr. Bill Daniel of Purdue University,

continued on page 14

Sports turf leaders
Some of the top experts in the care and maintenance of natural turf athletic fields attended the Sports Turf Managers Association (STMA) meeting in Denver recently. Pictured here are some of the leaders in the organization. Standing (l to r) are Dick Erickson, STMA President Dave Frey, Treasurer Steve Wightman, Melissa Marshall, and Vice President Mike Schiller. Seated (l to r) Roy Zehren, Harry Gill, Dr. Bill Daniel, and Executive Secretary Dr. Kent Kurtz. Gill and Erickson are past presidents of the organization.

ASSOCIATIONS

PLCAA shows strength at Tampa convention

Professional Lawn Care Association of America (PLCAA) Executive Director Jim Brooks says that organization doesn't intend to "rest on its laurels" in spite of an excellent year capped by a record-breaking conference.

More than 1,650 lawn care operators attended the PLCAA convention in Tampa in November. It was the largest conference in the still-young history of the organization. The 1983 conference in Indianapolis drew 1,297 participants. In addition, there was a 45 percent increase in the number of exhibits over the previous conference. The trade show floor featured 230 booths.

"We've got an even greater year coming," Brooks says. "As a young organization we have a lot to accomplish and a lot out there that we can call opportunity."

The PLCAA grew by 250 new members in fiscal 1984 and the membership now exceeds 600. Says Brooks, "I'm convinced that there's no way except for this association to become *the* preeminent association in the turfgrass industry."

Missing from the Tampa activities was PLCAA President John Kenney who was recovering from an ear ailment. In-coming president Bill Fischer, Plainfield, IL, claims Kenny's efforts gave the organization a healthy boost by increasing membership, organizing the Tampa conference, and publishing an industry safety manual. Says Fischer, "John should certainly be quite proud of his administration."

Joining Fischer as new officers in

continued on page 14

GET YOUR CREWS BACK ON COURSE FAST WITH ONE-SHOT ROUNDUP.®

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So when you're looking at engine options—whether it's OEM or replacement power—don't overlook the Briggs & Stratton 187 I/C. The extra-ordinary lawn mower engine.

For details, call your Briggs & Stratton dealer. Or write Briggs & Stratton, Industrial/Commercial Division, P.O. Box 702, Milwaukee, Wisconsin 53201.

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IN-THE-MIDDLE

Storr Tractor scores with dealers

Landscape contractors are not as easy to find as many people think. It takes extra leg work to find them, and when you do, they are often using homeowner or agricultural equipment.

But, they are out there and Storr Tractor of New Jersey and the manufacturers it represents (Toro, Smithco, etc.) wanted to find them.

The assignment was handed to Harold Block two years ago. The answer turned out to be self-employed dealers instead of more distributor salesmen. Storr set up 35 small dealerships in the New York metropolitan area, backed them up with direct mail and mini-shows, and is now reaping business it wasn't getting before. Storr's manufacturers are happy with the results and are encouraging other distributors to do the same.

"It's hard to tell your distributors his salesmen are missing accounts," says Toro's Jim Link. "Distributors have become order takers," exclaims Locke's Kevin McGrath. "The responsibility for finding incremental business is the distributor's," Ted Smith of Smithco points out.

Block said one of the advantages of dealers is you supply them the equipment boxed up. There is no set-up.

One thing is clear to both manufacturers and distributors, high replacement parts should be provided in a package to the customer. Depending upon the distributor or dealer for all service is not reasonable, as lawn care operators have been saying for years.

LESCO adds wholesale outlets

Frank Kollath has taken on the biggest challenge of his career, setting up a chain of wholesale outlets in key cities for LESCO, based in Rocky River, OH. The first two stores should open their doors this month in Boca Raton and Fort Lauderdale. Scott Sincerbeau and Mont Mottice have been named regional managers for LESCO's new operation.

"We are looking for incremental business missed by our truck salesmen and mail order business," Sincerbeau said. "We are not competing with the trucks. The stores will be in areas of known high landscape business. We will have inventories of product for immediate pickup."

Lofts builds new base in Phoenix

The overseeding business is greener than ever in Phoenix and Lofts Seed has set up a new distributor there to capture its share. Dave Schneider, formerly with Valley Seed, is now on his own offering the Loft's line to Phoenix seed buyers. Dave's new number is (602) 996-8981.

STMA *from page 13*

Barney Barron, superintendent of parks in San Francisco, and Dick Erickson of the Minneapolis Metrodome among others.

Highlight of the conference was the presentation of the "Lone Ranger" award to Steve Wightman, grounds superintendent at Mile High Stadium in Denver. Wightman was honored for his dedication to the Mile High playing surface in spite of a schedule consisting of two professional football teams, a professional baseball team, concerts, and the annual "Rumble on the Rockies" Drum and Bugle Corps Competition.

Past recipients of the award include Milwaukee County Stadium Superintendent Harry Gill and PAT co-inventor Dr. Daniel.

The new address of the STMA is: STMA, c/o Don Marshall, 2000 S. State College, Anaheim, CA 92806.

PLCAA *from page 13*

PLCAA are Vice President Jim Marria, Boise, ID, and Secretary-Treasurer Keith Weidler, Omaha, NB. New board members are Dr. Paul Schnare, Cape Girardeau, MO, Paul Moore, Las Vegas, NV, and Jerry Garnett, Monmouth Junction, NJ.

Next year's convention will again be in Tampa from Nov. 17-21.

In related conference news, Greg Bushman, marketing manager for Stauffer's special products, announced a joint publicity campaign to promote the lawn care industry. Funded by Stauffer and sponored jointly by Stauffer and the PLCAA, the campaign is targeted for national, regional, and local publications.

"This program is designed to heighten the public's awareness of their lawns, inform them of the complexity of maintaining a quality lawn, and educate them as to the services offered by the lawn care industry," Bushman says. Stauffer will be providing the media with a series of articles.

Of particular note is an article entitled, "Lawn Chemicals—Safer than You Think." Bushman notes, "this story will strive to negate some of the perceived fears surrounding chemicals in general, and lawn chemicals in particular."

WHY VICON SEEDER/SPREADERS ARE THE MOST ACCURATE SHOT ON THE COURSE.

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UPDATE

Kelthane voluntarily suspended

Rohm & Haas has voluntarily suspended sale of the miticide and powdery mildew fungicide Kelthane (dinocap) until additional studies are completed.

Like silvex, dinocap was susceptible to attacks because of biproducts it contains, in this case DDT, rather than the active ingredient. Rohm & Haas attorneys say the company has developed methods to reduce the level of DDT produced as a biproduct during manufacturing. Levels of DDT reached 10% during EPA studies.

EPA accepted Rohm & Haas's voluntary suspension and is giving the company until April 1 to produce new research data.

Elanco enjoys burst of labels

Elanco's fortunes were evidenced by a string of label approvals this winter. The first was Rubigan, a fungicide for turf. This would have been plenty for nearly any chemical company. But, to make the rewards even sweeter, EPA is expected to say yes to new Surflan and Treflan combinations called Team and XL for weed control to add to Elanco's Balan business. A growth regulator called Cutless and an aquatic herbicide named Sonar should be registered within months.

Meanwhile, Ciba Geigy hopes to see approval for the turf insecticide Triumph and the fungicide Banner this winter. Many of these products have been expecting registrations for more than two years.

Monsanto's Limit now labelled

"A triple to deep center," is what Monsanto President Richard Mahoney calls Limit, the company's new growth regulator. Monsanto calls Roundup one of its home runs.

Limit received EPA registration for utility turf two months ago. Research plots with Limit have looked good in state trials.

Ruckelshaus' leaving signals cuts

Washington insiders believe William Ruckelshaus, twice administrator of EPA, left his post mainly due to impending budget cutbacks and not simply because he felt he had the Agency back in shape.

Registrations had just started to flow again, more than a year after Anne Gorsuch Burford was replaced. Ruckelshaus successor, Lee M. Thomas, was head of EPA's Toxic Waste program and will focus primarily on those programs.

Any major change of direction in the agency may hamper current momentum established by chemical manufacturers.

INDUSTRY

Crowd toasts LESCO's new headquarters

The planners for LESCO's open house of its new headquarters in Rocky River, OH, were expecting 500 guests. Instead the newly painted and polished walls bulged with hundreds more.

Customers and suppliers from as far away as Oregon toured the new building's labs, offices, computer facility, and display truck.

A sense of accomplishment was evident on the faces of Chairman Jim Fitzgibbon, President Bob Burkhardt, and vice presidents Gene Probasco, Herb Cole, Ron Giffen, Skip Burkhardt and Ron Smith. In 22 years, LESCO has grown from a local nursery and golf course supplier into a public corporation serving the Green Industry in 22 states.

Lesco Chairman Jim Fitzgibbon and Elanco's Tom Perkins celebrate the opening of Lesco's new headquarters in Rocky River, OH.

EQUIPMENT

Deere expands equipment warranty

John Deere announced an expanded warranty for new grounds care equipment starting with purchases made on Oct. 1, 1984.

Under terms of the new warranty homeowner products will be covered for two years instead of one and the two-year warranty also applies to many commercial machines, including walk-behind mowers, certain tractors and the company's new line of front mowers for professional groundskeepers.

The new John Deere limited warranty applies to:

Walk-behind mowers designated

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The complete Maxi Irrigation Management System (MIMS™), from its IBM computer to its in-field stand-by modules, offers the golf course superintendent multi-function, multi-station performance with unequaled flexibility.

Rain Bird's 47DR and 51DR rotors, engineered to meet stringent water and energy conservation demands while outdistancing the competition, feature the industry's first diaphragm valve, internal porting and built-in regulation.

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by John Deere as commercial. (Two years)

All other walk-behind equipment (Two years; one year if used for purposes other than personal household use).

Tractor models 650 (14.5 PTO hp) and 750 (18 PTO hp). (Two years or 1,500 operating hours, whichever comes first.

All other tractors and riding mowers of 16 hp or less. (Two years or 1,000 operating hours, whichever comes first.)

When a loader, backhoe, snow thrower, material collection system or other attached implement is purchased with a grounds care machine, the implement is warranted for the same period as the machine.

Available in 32", 36", 48" and 60" models. 48" Model no. 48110H shown

Lawn and turf care professionals turn to Kees for their commercial cutting needs. They know Kees heavy-duty machines are engineered to deliver unmatched performance and ease of operation.

The 32" and 36" units are equipped with either an 11 h.p. Briggs I/C engine or 11 h.p. Honda synchro-balanced engine. The 48" electric start engine has a 14 h.p. Briggs I/C engine and the 60" unit is equipped with an 18 h.p. electric start Briggs I/C engine.

Kees mowers are designed with the operator in mind. Fingertip controls are conveniently operated from the optional sulky and individual rear drum brakes provide responsive handling on all types of terrain. The sulky can be quickly detached for difficult side hill cuts or for transport.

Fully baffled under-deck design for clean, safe discharge and a time saving 4-gallon fuel tank that lets you cut more acres per hour.

Kees mowers make short work of those tough cutting jobs and give you a greater return on your investment. Kees 32", 36", 48" and 60" mowers...the heavy-duty workhorses!

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SEED

Idaho field burning issue heats up

The Associated Press reports the Idaho Board of Health and Welfare has adopted controversial new regulations covering grass-burning and other open field burning in the state.

Grass seed growers burn their fields in August and September to get rid of stubble after the seed is harvested.

The measure, however, appears to be headed back to the Idaho legislature because of formal protests from the seed growers in the area.

Residents in the area of Coeur d'Alene, ID, say the smoke fills the valleys, causes health problems and chases tourists away.

The state regulates open field burning and can ban it outright under certain emergency situations.

Don Jacklin of Jacklin Seed, Post Falls, ID, told the Intermountain Grass Growers Association board the industry would like some form of mandatory fee imposed on grass-burners. He said that could help fund research into alternatives to burning. Jacklin said the association now has a voluntary contribution program, but only about half its members participate. Jacklin said growers are participating in on-going research in Oregon and want to continue funding the program.

SAFETY

Standard issued on turf equipment

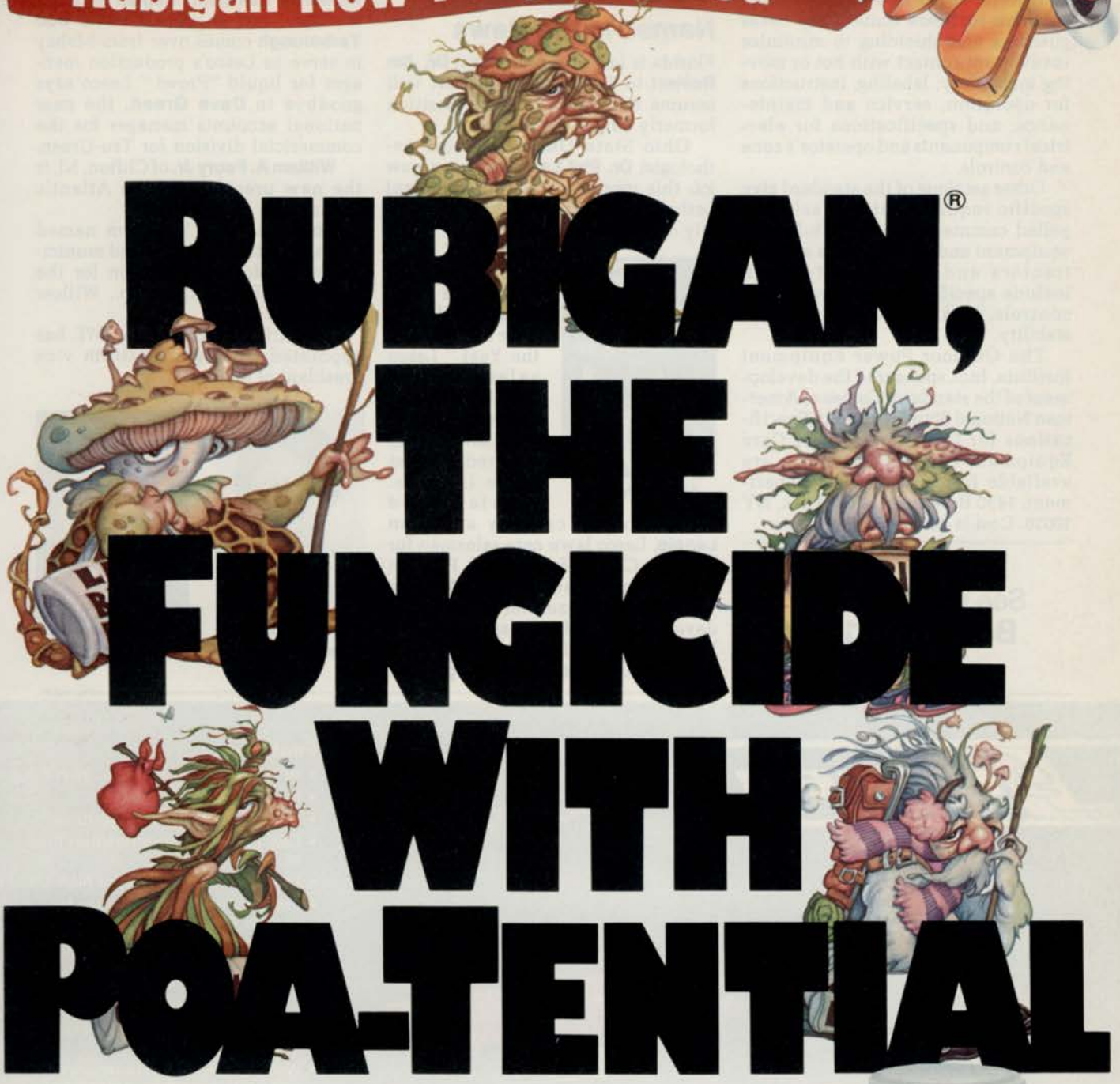
The revised American National Standard, just published by the American National Standards Institute, establishes safety specifications for mowers and tractors, debris pickup units, and rake attachments for tractors.

These machines can either be self-operated, ride-on machines, towed machines equipped with wheels, or machines controlled by an operator walking behind the unit.

Application of the standard by manufacturers of commercial turf care units is intended to prevent:

- Injury through inadvertent contact with machine blades or rotating parts
- Accidents caused by machine instability
- Injury resulting from inefficiency of mechanical drives on machines
- Fires and burns caused by machine disfunction.

Rubigan Now Fully Labeled



RUBIGAN®, THE FUNGICIDE WITH POA-TENTIAL

Rubigan puts your fungi on the road again and sends Poa packing. With your blessing. Because while Rubigan controls dollar spot and large brown patch at low rates, at higher rates it also controls snow mold, fusarium blight, stripe smut, and gradually reduces *Poa annua*.

Have Poa your way. Keep it, or slowly phase it out. Depending on application rates, it's your choice. Gradual *Poa annua* reduction can be achieved with Rubigan and proper management techniques, or Rubigan can be used at low rates in a normal dollar spot program without affecting your *Poa annua*.

Rubigan penetrates leaves rapidly. It's not susceptible to washoff once the spray dries. And don't worry about fungi resistance due to Rubigan's multi-sites of inhibition. Rubigan also lasts longer. Longer spray intervals reduce application trips, saving you fuel and labor. Plus Rubigan gives you excellent turfgrass safety. It's as good for your turfgrass as it is devastating to your five major turf diseases.

So whether Poa is friend or foe, build your turf disease prevention program around Rubigan. **Turf products with benefits that make the difference.**

For best results always read and follow label directions. Rubigan®—(fenarimol, Elanco Products Company)
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General requirements apply to all common turf care units. They cover guarding and shielding to minimize inadvertent contact with hot or moving machinery; labeling; instructions for operation, service and maintenance; and specifications for electrical components and operator's zone and controls.

Other sections of the standard give specific requirements for self-propelled commercial turf walk-behind equipment and ride-on units and turf tractors and attachments. Both include specifications for operator's controls, braking mechanisms and stability.

The Outdoor Power Equipment Institute, Inc., sponsored the development of the standard. Copies of American National Standard Safety Specifications for Commercial Turf Care Equipment (ANSI B71.4-1984), are available from ANSI Sales Department, 1430 Broadway, New York, NY 10018. Cost is $9.

See us at GCSAA
Booth # 1120

PEOPLE

Names in the News

Florida is losing entomologist **Dr. Jim Reinert** to Texas A&M. Reinert will assume the Dallas research position formerly held by **Al Turgeon**.

Ohio State University turf pathologist **Dr. Phil Larsen** starts a new job this month as head of the plant pathology department at the University of Minnesota.

Harry Podvia

Lesco Inc., Rocky River, OH, has named **Harry Podvia** "Lawn Care Salesman of the Year." Lesco salesman and Vice President of National Sales **Ron Giffen** was honored for first place in sales. Podvia placed second in that category and **Glen Lessig,** Lesco lawn care salesman for the East Coast, placed third. Product development manager **Paul Morgan** was also recognized for his work in developing the Lesco spreader and Lesco Jet Action Deflector.

In other Lesco news, **Gregory A. Richards** has been named product manager, turf chemicals while **Bob Yarborough** comes over from Mobay to serve as Lesco's production manager for liquid "Prowl." Lesco says goodbye to **Dave Green**, the new national accounts manager for the commericial division for Tru-Green.

William A. Feury Jr. of Clifton, NJ, is the new president of the Atlantic Seedsmen's Association.

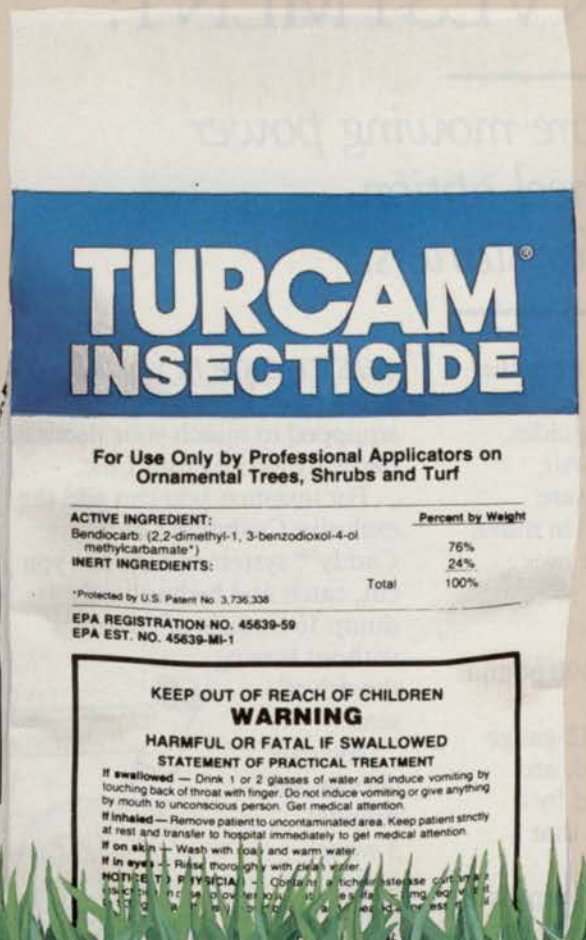
Robert L. Tate has been named manager of the newly created municipal/urban forestry division for the Asplundh Tree Expert Co., Willow Grove, PA.

The Ariens Co., Brillion, WI, has appointed **G. Roger McGrath** vice president of finance.

Robert L. Tate

G. Roger McGrath

UNDERCOVER AGENT



An advanced carbamate insecticide that roots out and ruthlessly destroys white grubs, chinch bugs, sod webworms, mole crickets and other lawn and turf "terrorists". This tough operator doesn't get trapped in thatch, thus assuring positive grub control.

TURCAM® is odorless...works well in spray equipment...won't damage turf or ornamentals. You'll find that TURCAM packs a federally-approved nationwide label, too.

Powerful reasons for assigning TURCAM to your toughest pest control problems.

For more information on TURCAM, including full labeling and recommendations for use, contact your local distributor or write to:

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WHAT MAKES A CUSHMAN FRONT LINE™ WORTH THE INVESTMENT:

We've given it 35% more mowing power and a new 4-wheel option. But that's just for starters.

The 1985 Cushman Front Line is not the cheapest mower you can buy.

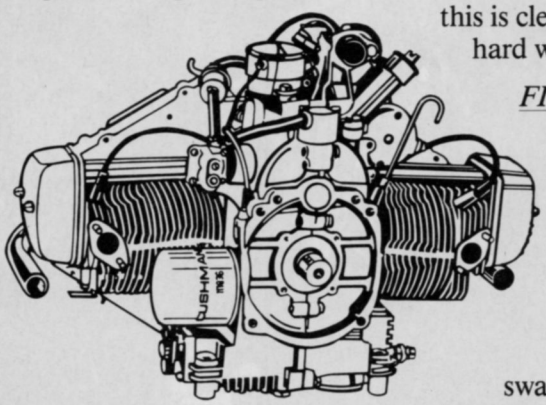
But it is most certainly the least costly mower you can **own.** Simply because it's built to last years longer than any other mower made today.

Here's the proof.

A NEW 22-HP ENGINE.

Every gas-powered Front Line is now equipped with the remarkable new 22-hp Cushman engine.*

It gives you the power to maintain speed through tall grass,



dense weeds and other conditions that might stop other mowers.

It's built the way you want an engine built — tough. The crankshaft is forged alloy-steel. The cylinder heads are reinforced for extra strength under stress.

And all the details — from the Teflon-coated O-rings and the swaged-in-place valve guides, to our exclusive Clean-Air Induction System — were designed with one goal in mind.

Years of dependable performance.

BUILT TO LAST.

The Front Line is 1300 pounds of mowing muscle.

Its mowing deck is 12-gauge carbon steel; reinforced, arc-welded and surrounded by a tubular torsion system that prevents twisting.

From the machine-sharpened, heat-treated steel blades to the diamond-plate steel floorboard, this is clearly a machine made for hard work.

FIRST CLASS MOWING.

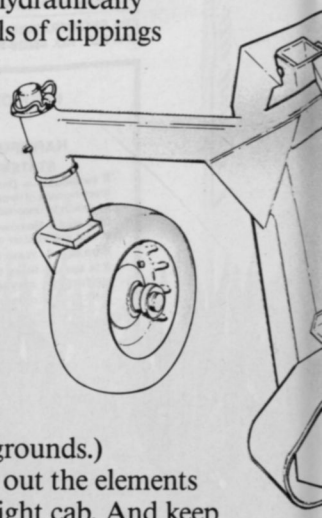
Here's where it all pays off: the quality of a Front Line mowing job.

The three cutting blades are positioned to overlap each others' swath slightly. So no grass is left uncut. The driver can maneuver around bushes, trees and sidewalks with incredible precision, thanks to the Front Line's Dual Traction Assist pedals — separate braking for each of the two front wheels that gives you a zero turning radius.

THE CHOICE IS YOURS.

No other mower can be equipped to match your needs as perfectly as the Front Line.

For instance, you can add the exclusive Cushman Grass Caddy™ system, which lets you cut, catch and hydraulically dump 16 bushels of clippings without leaving the driver's seat.



You can choose our original 3-wheel design, or Cushman's new 4-wheel model (a big plus on delicate turf or steeper grounds.)

You can shut out the elements with a weathertight cab. And keep your Front Line working all year with a Snow Thrower or Rotary Broom accessory.

But no matter how you equip your Front Line, one thing is certain.

It's an investment you'll be glad you made.

A FREE DEMONSTRATION

See the Cushman Front Line in action. Call toll-free:

1-800-228-4444.

*Diesel power is also available.

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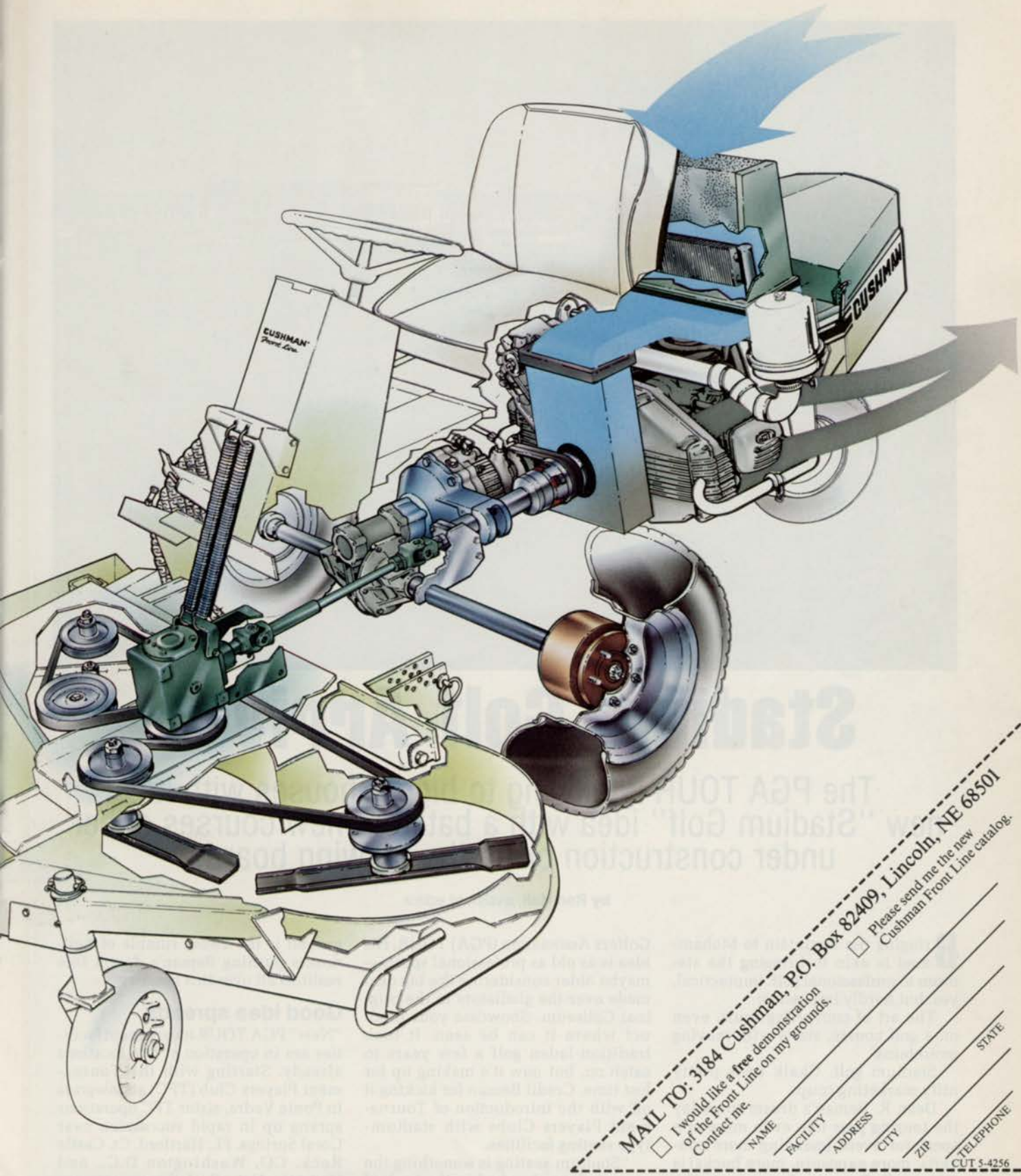

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Stadium Golf Arrives

The PGA TOUR is playing to bigger houses with its new "Stadium Golf" idea with a batch of new courses either under construction or on the drawing boards.

by Ron Hall, assistant editor

Bringing the mountain to Mohammed is akin to bringing the stadium to professional golf. Impractical, yes, but hardly impossible.

The art of converting souls, even on a golf course, starts with moving mountains.

Stadium golf. Chalk up a pretty nifty marketing coup.

Dean R. Beman's dream to parlay the touring pros into even more of a spectator event (meaning more converts, more exposure, more bucks) is taking off. Beman, of course, is the commissioner of the Professional Golfers Association (PGA) TOUR. His idea is as old as professional sports—maybe older considering the big deal made over the gladiators in the original Coliseum. Showcase your product where it can be seen. It took tradition-laden golf a few years to catch on, but now it's making up for lost time. Credit Beman for kicking it off with the introduction of Tournament Players Clubs with stadium-type seating facilities.

"Stadium seating is something the commissioner has had in the back of his mind for as long time," Dale Antram at PGA national headquarters in Ponte Vedra, FL, tells *Weeds Trees & Turf*. "It's more than making it. It's getting tremendous reaction."

That sound you hear in the background is the sweet rumble of bulldozers pushing Beman's dream into realities all over this country.

Spectators at the 18th green *are treated to this view of the colonial clubhouse as well as the action below from their "stadium" seats.*

Good idea spreads

"New" PGA TOUR tournament facilities are in operation at five locations already. Starting with the Tournament Players Club (TPC) at Sawgrass in Ponte Vedra, sister TPC operations sprang up in rapid succession near Coral Springs, FL, Hartford, Ct, Castle Rock, CO, Washington D.C., and Houston. Not all of the courses are new, some have been rennovated. All, however, will have several features in common, the most obvious being an annual major tournament and provisions to allow thousands of additional spectators to see the touring pros in

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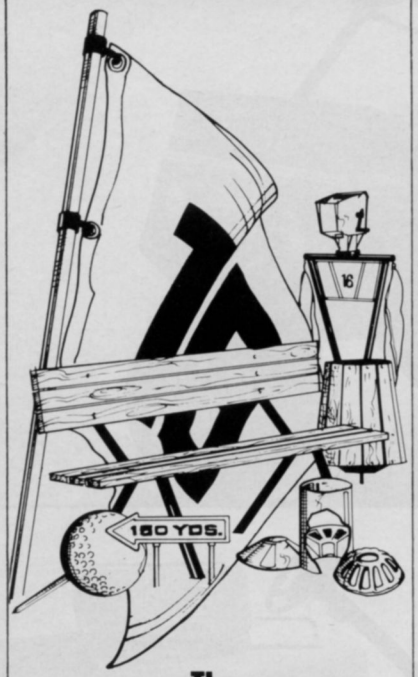
WTT 185

FROM TEE TO GREEN



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Tee. Fairway. Green, or around the clubhouse. Whatever your needs for golf course accessories you'll find it at Standard Golf. Standard has the most complete line of accessories–all made with the top quality that Standard built its reputation on.

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New, free 32-page full color Standard golf course accessories catalog. See your Standard Distributor or contact: **Standard Golf Company, 220 E. 4th St., Box 68, Cedar Falls, Iowa 50613 (319) 266-2638.**

STANDARD GOLF Pro-Line

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action, *in person*, stadium type seating.

That's not to say you're going to see row upon row of bleachers at your local course in the years to come. The polyester crowd wouldn't allow it, the demand wouldn't be there without a major tournament, and some courses are too sacred to be tinkered with.

"There is no intent by the PGA TOUR to do away with some of the great courses," Antram adds. Tournament Players Clubs "will work only in the places where the sponsor, the developer, and the Tour can all come out winners."

"There is no intent by the PGA TOUR to do away with some of the great courses"
—Antram

Winners all the way around?

The TPC at Plum Creek, just south of Denver was completed days before hosting the Senior Tour's Denver Post Champions of Golf this past summer and thousands of spectators filled the grass-covered bleachers built into the stone walls of the rolling hills. The Sammy Davis Jr. Greater Hartford Open, held at the TPC of Hartford for the first time, likewise drew phenomenal galleries. Unlike the Plum Creek, Sawgrass, and Eagle Trace courses, the Hartford location does not have bleachers built into the earth but was designed with spectator mounds. Noted golf architect Pete Dye, inspiration for Sawgrass (home of the Tournament Champions Tournament) and Plum Creek, redesigned the back nine at Hartford, and his 18th hole, literally in a horseshoe canyon, played to an almost unbelievable gallery.

Spectators like the view

"It's given the spectators who are paying the bills the chance to see the action," Pete Pierson, superintendent at the Hartford course, says. "There is a tremendous amount of spectator viewing. I think it was talked about for some time after the tournament."

Course superintendents like Pierson and Cal Roth, superintendent at the TPC at Plum Creek, face additional maintenance tasks as a result of the stadium concept, the biggest being keeping the acres of spectator viewing areas sharp.

Roth admits the scenic rock-faced bleachers at his Colorado course are going to take some extra work, specifically hand-mowing with Flymo mowers. He's using the opportunity for some experimentation as well.

Roth says, "the concepts are new and I'm positive that they're going to work, but it's going to take a couple of years to find out what grasses are going to work."

Roth is relying on fine fescues for the roughs although the spectator area around the 18th hole is Kentucky bluegrass to blend into the lawn of the nearby club house. "I'm learning an awful lot about fescue. I haven't found too many experts when it comes to fescue and I have to kind of teach myself," he says. Although the bluegrass in the spectator area around the 18th should wear better with the huge tournament gallery, Roth feels the fescue elsewhere will require approximately half as much maintenance and still look good.

Eliminating handwork

The spectator mounds at Hartford are likewise covered with fine fescue, but the slopes are gradual enough to allow Pierson's crew to mow easily. "We can get into quite a few of them with a seven gang or a five gang or a rotary," Pierson points out. "We have eliminated a lot of the hand work." The Hartford crew combats the tremendous pounding of the roughs by the larger galleries by allowing the fescues to grow to 3½ to 4 inches. "When it gets dry we just quit cutting," Pierson adds.

But having a bigger audience for their handiwork is worth the challenge, both Pierson and Roth agree.

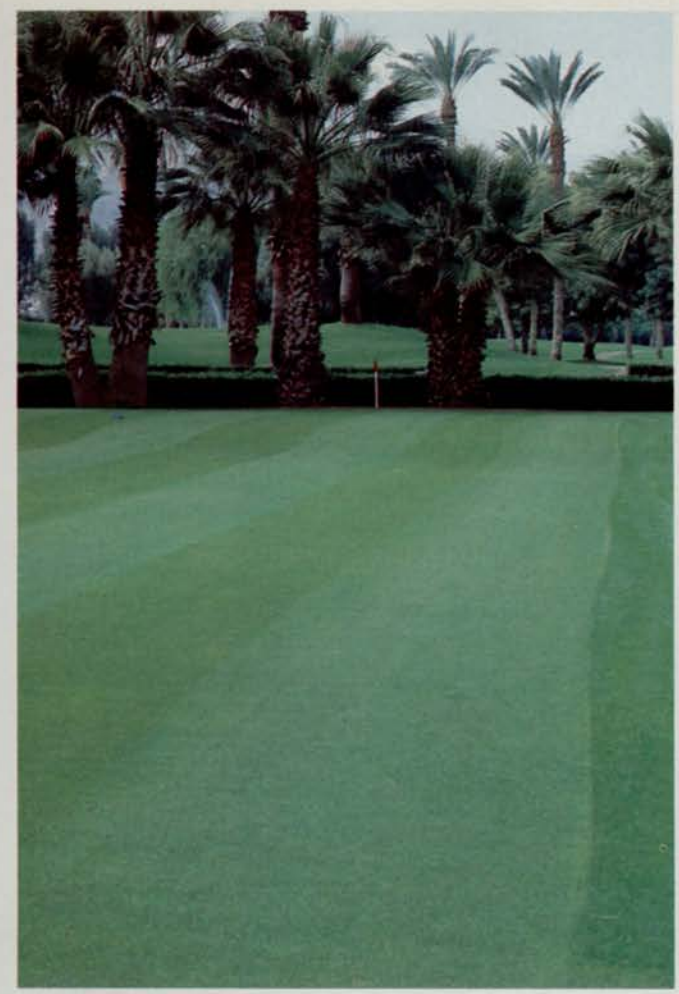
New courses coming

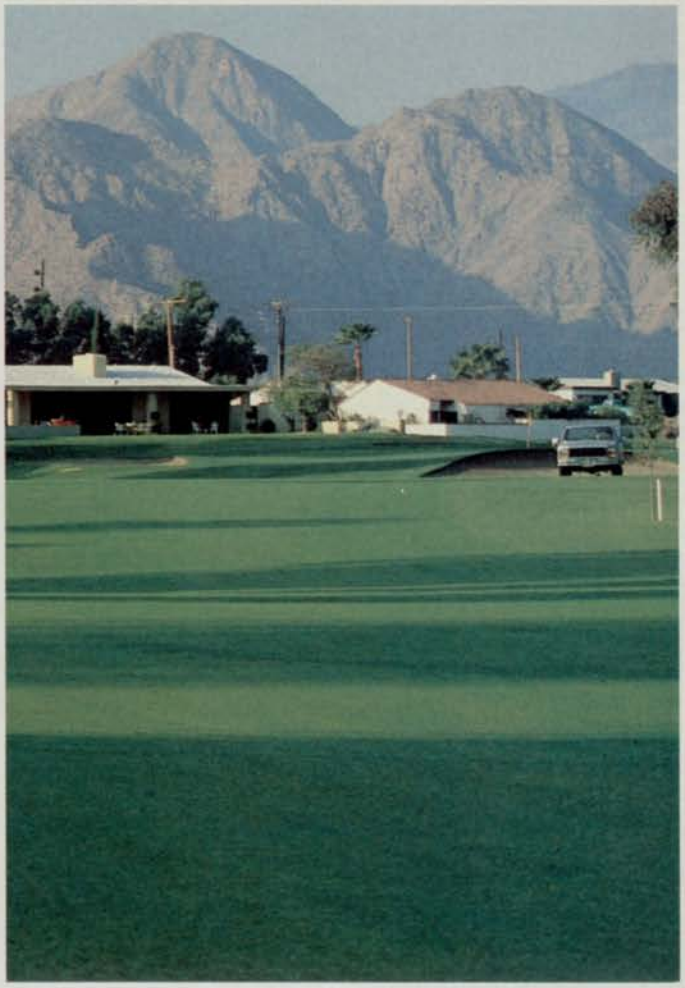
So, what's in store? More Tournament Players Clubs for sure.

New courses near Fort Pierce and Sarasota, FL, should be opening early this year, while plans are being finalized for courses near Dallas, San Antonio, and Phoenix sometime in the not-so-distant future. Nobody is ready to pull in the reins on the stadium-type concept yet.

"Golf is at somewhat of a disadvantage to other spectator sports," Antram of the PGA TOUR says. "It doesn't have a home field advantage. Also, the action is spread over 200 acres. What this idea has done is to create a tremendous increase in interest and in the size of the gallery."

In other words, asking Jack Nicklaus to play in the Rose Bowl is tantamount to asking Attila the Hun to confine his pillaging to Newark. It's obviously a heck of a lot easier to bring the stadium to him. **WT&T**





Otto Holt

Derby is the One Great Grass Found on Two Great Courses Of the Famed Bob Hope Classic

Harvey Hardin

Superintendents Otto Holt of Tamarisk and Harvey Hardin of Bermuda Dunes have pride at stake when the TV cameras roll at the opening of the Bob Hope Golf Classic.

Harvey and Otto need no reminding that the turf must be superb when the world's greatest golfers tee off and the eyes of the world are focused on your handiwork.

Derby turf-type ryegrass is their guarantee that Tamarisk and Bermuda Dunes pleases both the golfers and an international television audience.

Since 1974, Derby has been the never-fail, confidence builder of superintendents responsible for the turf at events ranging from great golf tournaments to the Super Bowl and Rose Bowl.

At both Bermuda Dunes and Tamarisk, Derby is sown wall-to-wall, tee-through-greens in the winter months when the native turf is dormant.

Derby is a great ryegrass which mows beautifully, thrives at cuts ranging from 3/16th to 1½ inches, is disease-resistant, dark green and very, very dependable.

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Without Subdue, Pythium can impose a real handicap.

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Subdue®—the advantage you need to protect your turf.

Pythium blight and damping off can turn your greens into little more than oversized hazards—within hours. Unless you have the preventative advantage—Subdue.

Highly water-soluble Subdue provides fast-acting, two-way action. First it destroys disease fungi in the soil on contact. Then Subdue penetrates grass plants through their root systems to protect them from the inside out. No other fungicide is as long-lasting, cost-efficient and effective against Pythium and downy mildew (yellow tuft).

An ounce of Subdue is worth a pound of cure. Just 1 to 2 fluid oz. per 1,000 sq. ft. lasts up to three weeks on established turf—which sure beats the cost of re-seeding.

Before Pythium turns your turf to ruins, use Subdue. It could be hazardous not to.

SUBDUE

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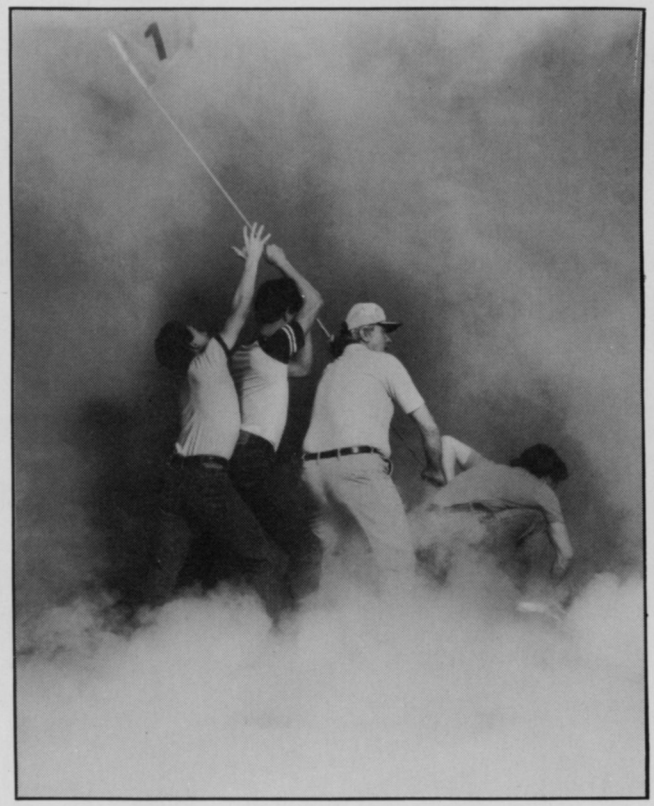
LANDSCAPE MANAGEMENT

Golf course superintendents don't all face the same on-the-job challenges. For the first time, WTT outlines the superintendent's job by type of course and location.

The Golf Battleground

by Bruce F. Shank, executive editor



The golf course superintendent's battle with man and nature is never the same from course to course. Superintendents who have worked in more than one part of the country or more than one type of course know the job can vary tremendously.

Northern superintendents lose turf to bitter winds and ice cover, transition superintendents struggle with dormancy to keep warm- and cool-season grasses playable, and southern superintendents have to manage two totally different types of grass without a slow season.

Daily fee and municipal course superintendents try to fulfill the public golfer's dream to play on courses like he sees on television with budgets less than half the size of tournament courses. Resort course superintendents adapt to volume golf while trying to make the golf course a carrot worth travelling hundreds of miles to play. Private course superintendents must satisfy the pickiest bosses who scream at the slightest sign of weeds or disease.

Up to now, data on golf courses and superintendents have been too general, lumped together by geographic regions and types of courses to provide average 'national all-course figures'.

Since *Weeds Trees & Turf* is the only organization, other than National Golf Foundation (NGF), possessing a list of virtually all golf facilities in the U.S., we thought our survey should produce specialized data. This report is the first specialized data on golf course maintenance to be published. We thank the superintendents who gave us their cooperation to develop the report.

Major trends

NGF announced in its 1983 Statistical Profile of Golf in the United States that the number of public golf facilities (municipal and daily fee) now, for the first time, exceeds the number of private facilities.

This fact alone could have major impact on the future of the golf course superintendent. Rather than serving a small, privileged membership, more superintendents are competing with each other to attract an estimated 14 million golfers in the U.S. to their courses. Golfers spent more than $43 million in greens fees and $16 million in equipment rental in 1983, or $900 per golfer per year says NGF.

A major reason for the increase is the growth in daily fee courses. NGF says the number of new daily fee courses in 1983 was three times the number of new municipal or private courses.

Daily fee courses are the only segment of the golf market that is profit motivated. Superintendents of daily fee courses have to produce a course that attracts the public golfer at the least practical cost. The only other segment of the market approaching the profit motivation of daily fee is the contract operator of municipal or private courses.

Superintendent profile

Nearly 200 superintendents completed the survey questionnaire. Of these, 31% work for southern courses, 15% for courses in the transition zone, and 54% for northern courses. Also, of this total, 25% work for daily fee courses, 51% work for private courses, 20% for municipal courses, and 4% for resort courses.

The average respondent has 11.5 years of experience, with those superintendents working for private courses having the most, 12.7 years. Municipal course superintendents have 9.4 years experience, resort course superintendents 11.8 years, and daily fee superintendents 9.9 years. Northern superintendents have 12.9 years experience compared to 9.2 years for southern superintendents and 11.2 for transition superintendents.

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	NORTH	SOUTH	TRANSITION
Maintenance	$150,724	$335,236	$156,340
Herbicide	$ 2,866	$ 9,156	$ 4,766
Insecticide	$ 2,563	$ 6,769	$ 3,057
Fungicide	$ 8,828	$ 6,024	$ 8,100
Fertilizer	$ 7,233	$ 19,748	$ 7,868

Rounds played

If you were a developer trying to figure out what type of course would get the most play, the answer is an 18-hole resort course in the South. The least play would come from a 9-hole private course in the transition zone.

The most play is experienced by daily fee courses in the summer. The next highest play is on resort courses in the winter. Third highest play goes to municipal courses in the summer.

As you might expect, private courses have the least play and resort courses and municipal courses have the most. Daily fee courses carry 20% less play than municipal courses in our survey.

Northern courses face considerably higher play in the summer than southern courses in their busiest spring and summer months. Nine-hole courses averaged one fourth the rounds of 18-hole courses.

Crews and budgets

From a superintendent's point of view, more play means more wear and the need for more maintenance. This is supported by our findings that 18-hole resort courses in the South also have the largest crews and the highest maintenance budgets.

Resort courses have an average of 13 maintenance workers. Private courses are not far behind with an average of 10 employees. Municipal courses have the smallest average crew, 6 employees. Daily fee courses also have 6 workers.

Overall, 18-hole courses have average crews of 9 people and 9-hole courses 3.5 people. Southern courses average 10 crewmembers, transition courses average 7.5 crewmembers, and northern courses average 8 crewmembers.

Now, for the first time, the number of public golf facilities exceeds the number of private.

Only 8.2% of superintendents responding have union crews. The greatest incidence of unions was in the municipal course category with 25.7 percent unionized. This is a major reason for the growth of contract maintenance for municipal golf courses.

There were no union crews reported by resort courses. Daily fee course crews are union in only 2% of the cases. Less than 4% of nine-hole courses are unionized. Location makes little difference in union involvement.

Resort course superintendents have the highest maintenance budgets, averaging $341,429. Daily fee supers have the lowest at $131,038. Private course maintenance budgets averaged $234,905. Municipal course budgets were greater than daily fee at $194,089.

Southern golf courses understandably have budgets more than twice as high as transition zone or northern courses. Southern superintendents have an average of $335,236 for maintenance, whereas transition zone and northern superintendents both have budgets of approximately $155,000.

Eighteen hole courses have budgets averaging $221,245 and 9-hole courses average $54,209.

One way to find out who spends maintenance dollars most efficiently is to compare rounds played to maintenance budget. This method leaves out variables, such as course quality and other income generated by the course, but it supports some assumptions on how efficiently different types of courses are maintained.

Using this method, daily fee superintendents are the most efficient spenders. Municipal course superintendents, surprisingly, spend 15% more per round for maintenance than daily fee. Of course, private course superintendents spend the most per round for maintenance.

Northern superintendents squeeze more out of maintenance dollars per round than southern, 30% more. Transition superintendents spend 18% more per round than southern supers. Finally, 9-hole superintendents spend 6% less per round for maintenance than 18-hole superintendents.

Superintendents also provided data on budgets for types of chemicals in the survey. Superintendents responding spend an average of $5,160 for herbicides per year. Daily fee courses averaged only $2,586 for herbicides and 9-hole courses only $1,198. Municipal courses spend nearly as much as private courses for herbicides, $5,678 compared to $5,909 for private. Southern courses spend the most per year for herbicides, $9,166, compared to $4,766 for transition courses and $2,866 for northern courses.

Resort course superintendents spend the most for insecticides per year, $7,286. Again, daily fee and 9-

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Budgets by Type of Course (average of 183 responses)

Type of Course	Maintenance Budget	Herbicide Budget	Insecticide Budget	Fungicide Budget	Fertilizer Budget	Winter Overseed	Renovation Seed
9-Hole	$54,209	$1,198	$1,323	$3,648	$4,368	$117	$547
18-Hole	$221,245	$5,568	$4,164	$8,413	$11,039	$4,298	$2,083
Daily Fee	$131,038	$2,586	$2,073	$5,399	$8,560	$1,711	$748
Private	$234,905	$5,909	$4,645	$10,059	$11,700	$4,943	$2,435
Public	$194,089	$5,678	$3,337	$4,859	$10,050	$2,363	$1,323
Resort	$341,429	$7,101	$7,286	$7,271	$26,286	$11,833	$1,833
All Courses	$208,798	$5,160	$3,957	$7,855	$11,178	$4,201	$1,829

hole supers spend the least for insecticides, $2,073 for daily fee and $1,323 for 9-hole. Private courses spend an average of $4,645 per year for insecticides and municipal courses $3,337.

Southern superintendents spend more than twice as much as either northern or transition zone superintendents for insecticides, $6,769.

Fungicide expenses are more standard than other pesticide expenses by region and by course type. It was the only product that daily fee superintendents spend more for than municipal superintendents, $5,399 compared to $4,859. Also, northern and transition courses actually spend more for fungicides than southern courses, $8,828 and $8,100 compared to $6,024 for the South. Some superintendents spend $35,000 or more for fungicides each year. Nine-hole courses have an average fungicide bill of $3,648.

Some of the biggest dollars spent by responding superintendents are for fertilizer, one spending $80,000. Southern superintendents spend an average of $19,748 per year on fertilizers. Resort courses took top prize spending $26,286 per year on fertilizers. All other regions and types of courses averaged less than $10,000 for fertilizers.

Equipment

Almost half the superintendents said they bought equipment in 1984 that they had put off buying previously. Using these answers to gauge budget sensitivity, it appears daily fee courses postponed buying equipment the least during the recession. Resort courses postponed buying more than the others.

Leasing is used to lighten the cash blow of buying during hard times. On average, only 6% of the superintendents lease maintenance equipment. Southern superintendents lease the most, 10.7%, and transition supers the least. Resort supers didn't lease at all in our survey. Daily fee and municipal courses lease roughly to the same degree, 9%. Only 4% of private courses lease maintenance equipment.

When asked if they have increased the amount of leasing, 9% of the southern and municipal course superintendents said they had. Seven percent of the daily fee supers said they are leasing more.

In 1983, the number of new daily fee courses was three times the number of new municipal or private courses.

1984 was a good year for irrigation suppliers with more than a fourth of the superintendents improving their systems.

All superintendents had some type of irrigation system. Sixty percent of municipal and 9-hole courses still have quick coupler systems. All resort courses reporting have automatic systems, with 25% of those solid state. Half the northern courses are still quick coupler while two thirds of southern, transition, and private courses now have automatic systems.

Fertigation, injection of fertilizers into the irrigation system, has taken hold in the South with 27% of the courses trying it. Maintenance-conscious daily fee superintendents are trying fertigation on 16% of their courses. Twelve percent of resort courses and 9% private are trying it. Fertigation is not a factor in 9-hole, municipal, transition and northern courses.

Only 14.2% of the superintendents manage the golf car concession. Maintenance of the golf car fleet is done by 20.2%. Sixty-five percent have nothing to do with the golf car concession.

Golf cars are leased in 27.3% of the cases with resort courses leasing the most, 37.5%. Private, membership restricted courses leased the least with 23.4%.

Of the 76.5% who own their fleet, each owns on the average 49 cars, with the largest having a 200 car-fleet.

E-Z-Go topped the list with 51.6% of the respondents owning cars by that manufacturer. Yamaha and Club Car tied for second with 18.5% of the respondents owning cars by those manufacturers and those clubs owning Harley-Davidsons were third with 16.3%.

Cultural practices

Municipal course superintendents still rely heavily on postemergence herbicides for weed problems. Slightly more than a third of the municipal superintendents use both pre- and postemergence herbicides. Another third use just preemergence herbicides.

Resort and private course supers are most inclined to use a complete

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herbicide arsenal with 75% using both pre- and postemergence herbicides. Southern supers are also more inclined to use both.

Fairways on southern and public courses are the least likely to receive fungicide treatment. Half or more of municipal, resort, and southern superintendents apply fungicides only to greens. More than a third of northern and private courses use fungicides on greens, tees, and fairways. Twenty percent of daily fee courses apply fungicides to everything but greens.

Sulfur-coated urea (SCU) was the slow release fertilizer used most frequently by the respondents, 45%. Seventy-five percent of the resort courses use SCU. Resort courses, and also daily fee courses, are the biggest users of IBDU. Ureaform is used the most by resort courses and the least by 9-hole courses. Organic fertilizers (i.e. Milorganite) are most popular with 9-hole and daily fee courses.

Wetting agents were used by 70.5% of the respondents on localized dry spots. Resort and southern courses use wetting agents the most. Nine-hole and transition courses use them the least.

Aerification is firmly entrenched in golf course culture. An overwhelming 94% of all courses aerify greens. Fourteen percent even said they aerify roughs. Tees are the next target of aerifiers at 80% and fairways are cored at 66% of the courses.

Private courses lead in all categories of aerification with 80% of fairways and greater percentages for tees and greens. Location makes little difference, except for roughs, where 23% are aerified in the South.

The gang fairway mower, once pulled by horses in the early 1900's and by tractors today, is losing ground to the self propelled fairway mower. Self-propelled fairway mowing units were used by 99 percent of the superintendents answering the survey.

Forty-two percent still use the gang mowers for fairways. Municipal and daily fee courses are holding on to the gang mower more than other courses. Only 25% of resort courses use gangs, opting for self-propelled 75% of the time.

Twelve percent have tried lightweight triplex type mowers for fairways, mainly private and northern courses as a method to reduce *Poa annua*.

Riding greens mowers were preferred by 71.6% of the superintendents to walk-behind greens mowers. Even 86% of the 9-hole supers favor riders. Private courses still use walkers 35% of the time.

A little more than half of the superintendents said they have tried to speed up their greens this year. Most of the quest for speed is at resort and private courses. Even 9-holers and daily fee courses made greens faster in more than a third of the courses.

Overseeding is a necessity today for golf courses with warm-season turf, with an average of $7,215 spent each summer by southern superintendents for cool-season seed. Resort courses spend nearly $12,000 per year for winterseed. Daily fee and 9-hole courses spend the least.

Seed for renovation averaged $1,800 per year for all courses, so you can see winterseeding is a big boost for seed producers. Northern courses have begun to overseed fairways in the spring to push out *Poa annua*. This may prove to be a huge new market for seed companies, quadrupling sales in some northern states.

Weed, insect problems

Crabgrass takes the honors as the most troublesome weed for golf course superintendents, with annual bluegrass, dandelions, clover, and goosegrass not far behind. Private course superintendents are those most concerned with annual bluegrass. Goosegrass is a concern primarily in the South and transition zone. Dandelions are most troublesome in the North. Nutsedge is a problem mainly to resort courses.

Grubs, cutworms and sod webworms are the most persistent insects superintendents have to deal with. Chinchbugs were less of a problem than anticipated at 5%. Most southern and resort superintendents rate mole crickets as a major problem. Resort courses took more insects seriously than other types of courses.

Dollarspot and brown patch are the most bothersome diseases, followed by pythium, leaf spot, and snow mold.

The survey showed 66.7% of the superintendents belong to the Golf Course Superintendents Association of America.

Superintendents were also very specific about the type of information they want to be able to do their jobs better; 83.1% want technical information, 69.9% want new product information and 66% like to know how other superintendents do things and solve problems. **WT&T**

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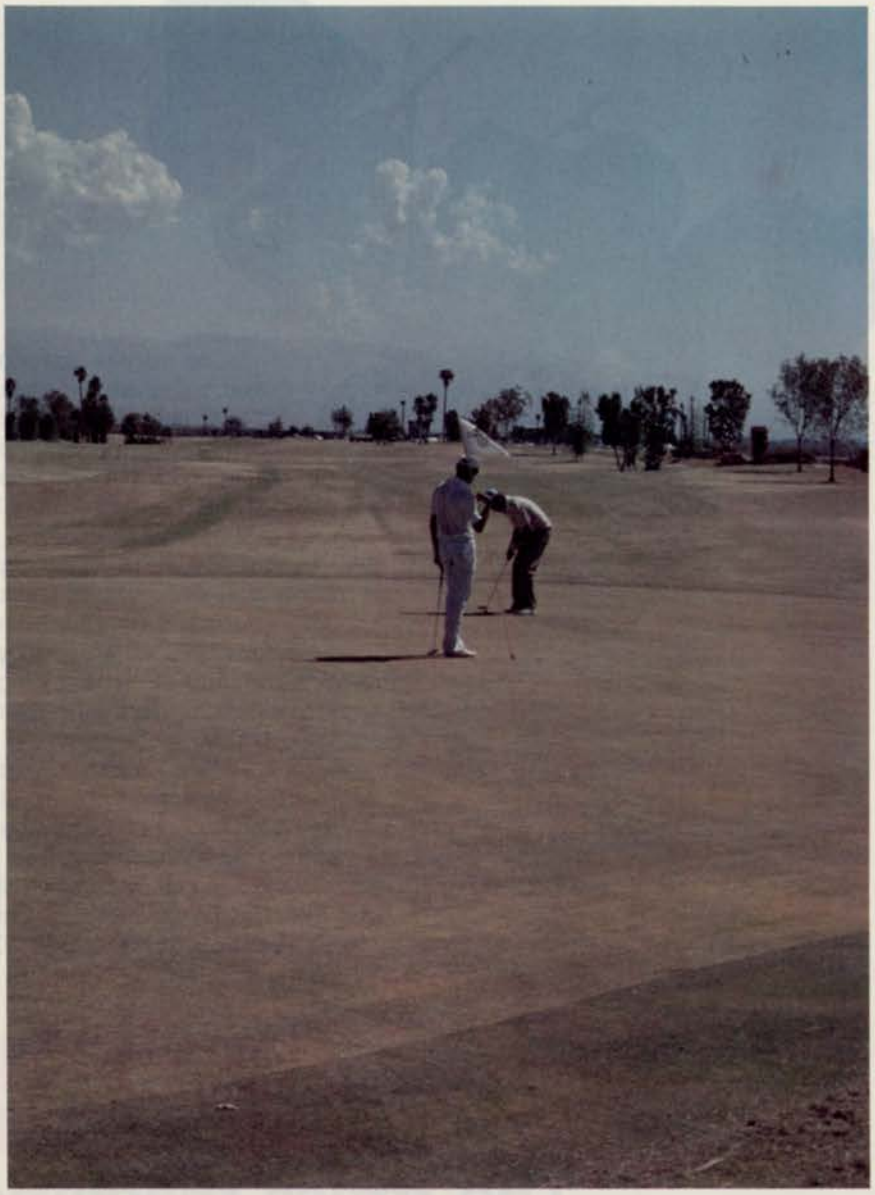
LANDSCAPE MANAGEMENT

Pressure in Paradise

One of the poshest golfing meccas in the world is also one of the hardest to maintain. Perfection has a price. And the golf superintendents of the Palm Springs area are only too familiar with the intricacies and peculiarities of grooming the courses so many come to play.



by Hartley Bennett

In the middle of the California low desert sits an oasis—and a gold mine.

In an area 25 miles long and 5 miles wide, an enclave of approximately 60 golf courses form the crown jewel of golfdom known as Palm Springs.

Twenty-two more courses are in the planning stage. Six of the new courses are actually in the community of Palm Springs. The vast majority, though, occupy a strip in the Coachella Valley. The valley extends eastward from Palm Springs along the base of the San Jacinto Mountains and includes Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta and Bermuda Dunes. Current development is moving towards the community of Indio.

This Garden of Eden sits in an otherwise stark, dry wasteland.

The legacy began back in 1926 when California oilman Thomas O'Donnell opened a private nine-hole course in Palm Springs.

A high price

Today, creating and maintaining the top-notch playgrounds of the Palm Springs area well enough to satisfy the expectations of the world's most knowledgeable and demanding golfers requires a golf superintendent to wage a constant battle against the hostile desert environment.

Relaxation in the lush surroundings beckons vacationers, but pressure in paradise is nothing new to the

Natural vegetation and the mountains *surround the beginning of another course under construction in Palm Desert.*

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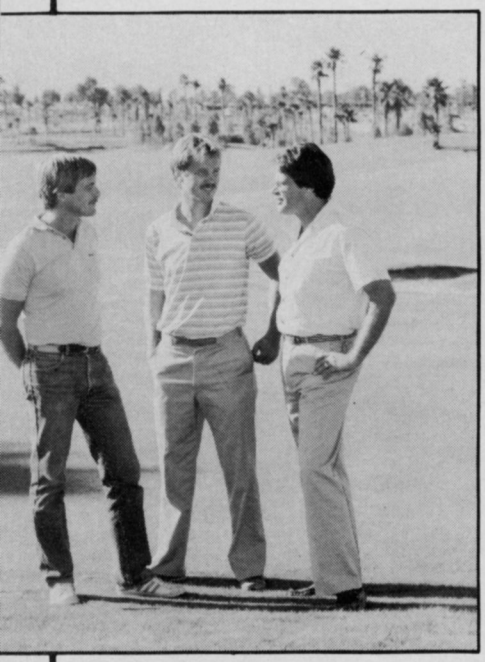

Palm Valley Country Club, *Palm Desert, CA. From left, Paul Quill, golf course construction manager, Gary Peterson, superintendent, Dennis Orsborn, director of golf course operations for the Sunrise Co. which owns the course.*

The explosive growth of new recreational real estate development presents yet another demand on the superintendent.

At the Lakes Country Club, Palm Desert, CA, *course renovation and construction of exclusive private villas go on simultaneously.*

golf superintendents who work there.

The explosive growth of new recreational real estate development presents yet another demand.

At the forefront of the most recent boom is the master plan concept of condominium development, and Dennis Orsborn, director of golf course operations for the Sunrise Company of Palm Desert, is one of its biggest proponents.

In on the ground floor of planning for multi-million dollar country club communities, he supervises the creation and maintenance of challenging golf courses which are established and playable five months after groundbreaking.

Speed and efficiency are essential as luxurious living units are simultaneously constructed next to emerging fairways with palm trees stacked like cordwood waiting for installation.

"We can never forget that the golf course is the homeowner's backyard before it is a golf course," says Orsborn. "Color is very critical. Construction and maintenance personnel must keep in mind that the visual appeal is of paramount importance and next the quality of the playing surface. We are in the business of selling condos and the golf course is a vehicle, secondary to sales."

Yet, he admits the course must provide outstanding playability.

The Old Guard

In contrast to the new community development concept, many private clubs exist which are among the oldest and most famous of the region.

"Perfection is the absolute requirement," says David Lozoya, superintendent of golf course and grounds for the Annenberg Estate.

The exclusive and superprivate country club courses both entertain and have as members some of the wealthiest and most influential clientele in the world.

Clubhouse grounds at these establishments are as important to the overall atmosphere as the course itself.

Mike Mongiello, superintendent of Eldorado, proudly points out the Desert Beautiful Award he won the last three years for the beauty of the total grounds area of his club.

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continued on page 50

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Balan's value story starts with its predictable length of control. In northern climates, where crabgrass is the only annual grass problem, a single 80-pound application of Balan is all you need. And at Balan prices, that's a huge savings over competitive preemergence herbicides.

If you have annual grasses that continue to germinate beyond Balan's residual period, a second application gives season-long control.

And Balan gives you extra management flexibility. With Balan, you can stimulate root growth by performing aerification between applications.

You can even reseed as soon as six weeks after Balan application. Some competition makes you wait up to four months before reseeding.

So why spend up to twice as much to control a few more annual grasses? Control your annual grasses, your costs and your management options with easy-to-apply Balan granules.

ELANCO™

Turf products with benefits that make the difference.

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What makes Ryan turf-care equipment worth the investment:

Core cultivation, dethatching, sod cutting... equipment engineered for more work value.

Maintaining fine turf is part art. Part science. And a lot of hard work.

And because your turf aerification and cultivation equipment has to work so hard...for so long... and come back for more, we've designed a complete system of hard-working equipment that you can match to whatever your jobs demand.

With Ryan turf care equipment, your turf looks great. And your bottom line looks even better.

Here's why Ryan equipment is worth the investment:

A better way to aerate greens.

Nowhere is the quality of your turf so critical as on the greens. But considering the rough treatment they get from most aerators, you may be reluctant to aerate at all.

Not so with the Ryan Greensaire® II or Greensaire® 16—aerators so precise that even fresh holes won't affect the roll of a putt.

The Greensaire 16 gives you the same thorough aeration as the Greensaire II—but in a more economical size.

Unlike rolling aerators, the Greensaire tines don't tear into the turf. They penetrate it in a quick up-and-down motion, removing cores up to 3″ long.

Greensaire II (pictured at right) covers a 24″ swath; takes 36 cores from every square foot; and aerates up to 8,000 square feet per hour.

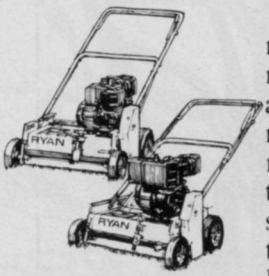
Add the optional Core Processor and you'll aerate, collect thatch, break up cores and top dress all in one operation.

The Greensaire 16 offers the same thorough aeration, but in a more economical size. You get a 16″ swath; 36 cores per square foot; and a speed of up to 4,000 square feet per hour. An optional windrow attachment makes clean-up simple.

Both units are available with revolutionary heat-treated tines that provide self sharpening action and less plugging-up.

Once you've seen either Greensaire at work, you'll never settle for an ordinary aerator again.

The toughest power rakes on turf.



The Ryan Ren-O-Thins. 8 or 5-HP

It's no easy matter for a machine to spin a blade 2700 revolutions-per-minute through thousands of square feet of thatch, roots and hard soil.

Hour after hour. Day after day. Year after year.

How long can a power rake take that kind of stress? You'll never know until you've owned a Ryan.

Take our big Mataway®, for instance. It's powered by a mighty 10-hp engine; built around a massive cast iron block; and features a 4-stroke cycle for extra torque and longer life.

If you don't need the muscle of a Mataway, you can still get Ryan ruggedness in the **8-hp** Ren-O-Thin® IV or the 5-hp Ren-O-Thin® III.

Interchangeable blades for all 3 models let you adapt your Ryan power rake to a variety of different jobs—from cleaning up surface thatch to deep slicing the soil.

A sod cutter that earns its keep.

Ryan's Jr. Sod Cutter is an investment every golf course can afford.

The compact size of the Ryan Jr. Sod Cutter makes it the only one economical enough for your golf course to own.

Its performance makes it the only one worth owning.

The **8-hp** engine lets one man cut up to 135 feet per minute, up to 2-1/2″ deep.

And whether you choose our 12″ or 18″ model, you'll be getting a professional, uniform cut with straight edges.

And The Ryan Family of turf-care equipment is only available from your Ryan dealer. He's in business for the long haul, with a proven record of service after the sale and a complete line of turf-care equipment to meet your needs.

A free demonstration.

Of course, the best way for you to learn about Ryan turf-care equipment is to see it in action.

Right on your own golf course.

To do that, contact your nearest Ryan dealer or call us toll-free at **1-800-228-4444.**

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It works harder because it's built better.
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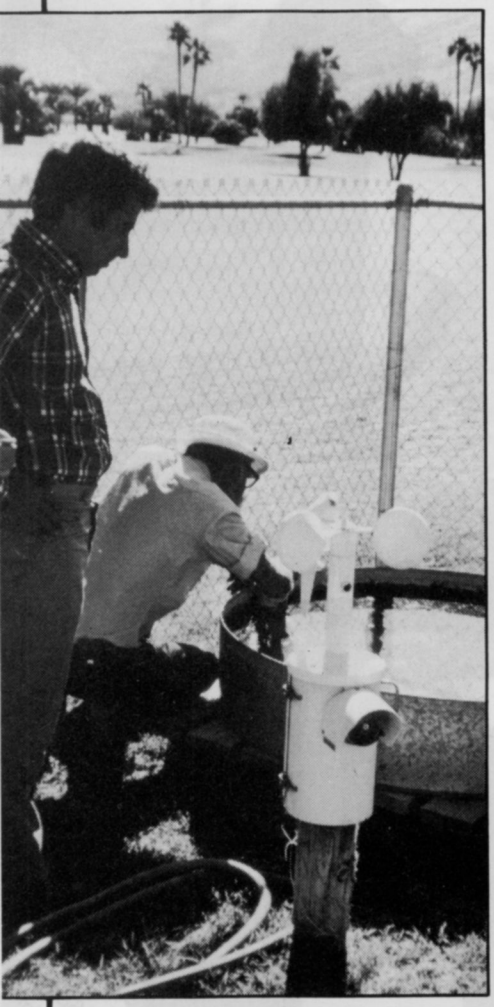
Mike Caranci, *superintendent of Canyon Country Club oversees some work being done at the course's weather station.*



Middle-priced condominiums and hotels border the many semi-private courses in the area. Residents get preferential starting times, but a great number of memberships are held by individuals who find the dues reasonable and within their recreational budget.

Providing an attractive, playable course while operating within tight financial constraints is a constant challenge. More than one superintendent has lost his job when poor management practices caused utility and equipment costs to rise.

Key to success

Hard work and dedication have laid the foundation for Palm Spring's success.

Within an environment of extremes where summertime temperatures can reach 120 degrees and wind can uproot trees and fill the air with blowing sand, golf course superintendents are under constant pressure to innovate and adapt. Most courses either shut down or allow only minimal play during the hot summer months.

All plans focus on the opening date of each course, usually sometime between mid-October and the first week of November.

Bermudagrass is most widely used for fairways and roughs with hybrid on the tees and greens. Ryegrass is used as overseed to overcome the bermuda's tendency to become an unsightly brown in winter.

In early August and September more than three million pounds of seed are delivered to the Coachella Valley area. Superintendents breath a bit easier when the bags of seed are safely stored in sheds.

Once begun, the overseeding process must progress on a closely timed schedule. Irrigation systems are checked and double checked to guard against breakdowns.

Terry Lortz, superintendent of Palm Springs Municipal Course, has to depend on the pool of city mechanics if he has any breakdown problems. Even in light of that, he proudly reports, "We've never failed to open on time."

Two months prior to overseeding, greens, tees and fairways are aerated and amended. Water is witheld and chemical growth retardants and defoliants are used.

Mechanical renovation is next with mowers operating 10 to 12 hours in the hot, dusty desert air. Seed is then applied and constantly watered. Daytime temperatures hover in the 100s and the sandy soil dries rapidly. Water is applied around the clock at carefully monitored intervals. Crews patrol the area on the lookout for sprinkler heads that may be stuck causing washouts.

If all goes well, the rye emerges a dramatic green within six days and is ready for the first mowing in two weeks.

A balancing act

Much can go wrong in the intervening time.

If the daytime and nighttime temperatures stay high the bermuda will reestablish and choke out the infant rye or an unexpected severe cold snap can kill it. Winds can blow the seed away and thunderstorms can drown it. Pythium blight can develop with devastating suddeness.

Bud Lombard, longtime area turf specialist, notes that he can never remember a failure nor an inability to make the opening date.

"The change is awesome," he reports. "No golf courses in the world are lovelier or better manicured. They all produce perfection in six weeks."

During the spring transition, the ryegrass is maintained as long as possible in the rising temperatures to allow the emerging bermuda to reestablish before "scalping" the rye.

Bermudagrass is most widely used for fairways and roughs with hybrid on the tees and greens.

At Eldorado and Ironwood greens are bentgrass and only fairways and roughs need renovation. The bentgrass does present a challenge in keeping the cool season grass alive during the summer months in the extreme heat of the desert sun.

Water crunch

Water is always a problem in the Coachella Valley.

A blow-sand filled aquifer fed by mountain runoff and a scant four inches of yearly rainfall is the lifeblood of the area. Some feel this natural basin has unlimited potential. Many others, like Tom Caranci of Cathedral Canyon Country Club and his son, Mike, who supervises Canyon Country Club, are concerned not only about cost accountability to the club owners but also about conservation of this valuable resource for the future. They fear that without the evaluation and modification of some current management practices, demand may eventually exceed the recharge.

Working closely with the University of California, the Carancis have weather stations on their courses which are monitored daily and provide information which Tom Caranci reports has saved 25 percent of the water that was formerly being used. Other measures such as modified pumps and separately designed irriga-

continued on page 100

Fine Fescue for Sure

Maintaining a fairway can be a real headache. Fine fescues give you less to worry about...

Keeping your course looking great and your budget balanced can be a real headache. Oregon grown fine fescues can make your job just a bit easier. When used on tees and fairways, fine fescues offer shade tolerance with low fertilizer and water requirements. Fine fescues mix well with ryegrass and bluegrass without getting pushy, and they have a tight, upright growth habit. Oregon fine fescues germinate and perform better than imported varieties.

Where do you *find* fine fescues? On tees, fairways, roughs, parks, home lawns, industrial campuses and anywhere a fine textured, shade tolerant turf is desired.

Where do you *get* fine fescue? Ask your distributor for *Oregon grown* fine fescue *for sure!*

For a series of eight tech sheets on Oregon grown Chewings and creeping red fescues, call or write

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Salem, OR 97302
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Circle No. 142 on Reader Inquiry Card

The artistic as well as the practical come together on a public golf course on Cape Cod. Dennis Highlands offers the old world feel of St. Andrews with an innovative Integrated Planting System using low maintenance grasses, wildflowers and ornamental plants. Golfer and superintendent get the best of both worlds.

Yankee Ingenuity

73 percent of the golf course site receives either no maintenance or low levels of maintenance.

Blend a little Yankee ingenuity with the time-tested golf course design of the Scots, and the product is one of the most unique golf courses in the country—Dennis Highlands in Massachusetts.

In recent years the design trend in American golf courses has been toward "the Scottish look." This has commonly been associated with a naturalized blend of native plants, existing in harmony with the environment, and requiring minimum maintenance.

In Scotland, this effect is a product of the forces of natural selection of plants, often over hundreds of years. Although many attempts have been made to realize "the Scottish look" in America, most have not been totally successful because of incorrect selection of plant materials, or due to a climate too hot to grow the desired species.

In Scotland the predominate plant materials are fine fescues i.e., chewings, creeping red or hard and brown top (Colonial bentgrasses), gorse, heather, and beach grass.

In the northern U.S., golf course fairways and roughs have been traditionally planted to creeping bentgrass or a mixture predominately of Kentucky bluegrasses and perennial ryegrass, which require intense maintenance practices. Fine fescues, the predominate turfgrass found in Scotland, is often used in the U.S. but does not normally persist when subjected to moderate to high fertilization and irrigation, common in today's maintenance techniques.

In fact, it is this high fertilization and heavy use of irrigation that environmentalists find the most objectionable about golf course development. This is particularly true in ecologically-sensitive areas as Cape Cod, Long Island, and the shores of the Middle Atlantic states.

And it is because of this intense respect for the environment that Dr. Michael Hurdzan in particular, is proud of Dennis Highlands.

"We had the utmost respect for the fragile environment of Cape Cod in planning this project," he said, "and I

Hole No. 3 *shows contrast between sheep fescue (unmowed) and hard fescue in the rough. The fairway is bluegrass, the green is bentgrass.*

Hole No. 3 *shows wildflowers and sheep fescue behind and beside Par 3 green.*

believe we achieved our goal of being as ecologically responsible as we could. Because of what we planted we reduced pesticide, fertilizer and water use as well."

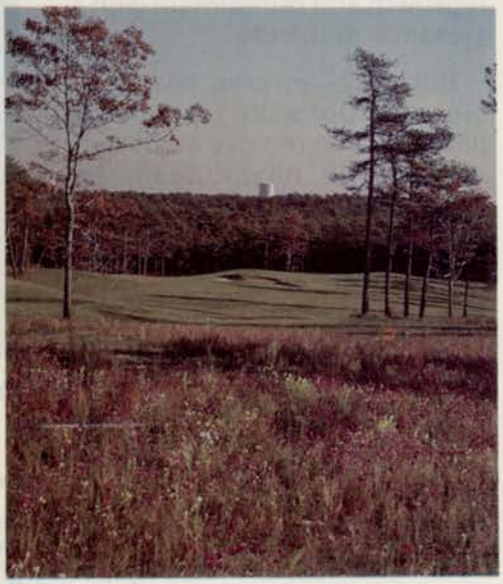
Unique and practical

The Town of Dennis, Massachusetts, wanted a public golf course that would be unique in its appearance yet functional in its operation and maintenance. It had a 178-acre site, of glacial origin, that featured sharply rolling, sandy hills covered with pine and scrub oak.

In addition, the town wanted to keep developmental and operational cost low so that it could provide citizens and visitors with moderately low cost golf. As with any development there were deep concerns about the availability of ground water and its possible pollution with nitrogen fertilizers.

The Town of Dennis, MA, wanted a public golf course that would be unique in its appearance yet functional in its operation and maintenance.

Realizing these issues, golf course architect Hurdzan, of Kidwell & Hurdzan, Columbus, OH, and Dr. Richard Hurley, vice president and turfgrass and plant material specialist, Lofts Seed, worked together to select plants that would persist under low maintenance and would achieve instantly on Cape Cod what it took centuries to achieve in Scotland. Their objective was to develop an Integrated Planting System (IPS) using commercially available grasses, wildflowers, and ornamental plants.



Wildflowers provide spectacular color *as well as low-maintenance groundcover for Hole No. 16 at Dennis Highlands.*

The grass along the fence in the photo at left was killed with a fast-acting systemic post-emergent herbicide. Obviously, no professional groundskeeper could abide this ugly mess, so the dead vegetation has to be removed with expensive hand labor. The systemic product is recommended for lawn renovation so, naturally, vegetation will grow back as new seeds germinate, resulting in an endless cycle of retreatment, ugly dead vegetation and more hand labor. Clean up a fence line with Dyclomec and vegetation will never again be a problem, because an annual pre-emergent application of Dyclomec will form a vapor barrier and keep the area absolutely clean.

Dyclomec turns Problem Areas into Beauty Spots

... and the vapor barrier eliminates repeated investment of hand labor to clean out dead vegetation.

Dyclomec is surely the most efficient herbicide that has ever been offered to professional landscapers. In fact, it is called the *landscaping herbicide*.

Now, at last, the groundskeeper can easily and economically achieve that manicured look, which consists of contrast. Of sharply defined areas where immaculate turf is contrasted with areas of beautiful, naked earth. Where ornamentals grow in an area of beds that are free of any distracting growth.

Until the advent of Dyclomec, such pristine landscaping could only be achieved with repeated investments of hand labor to clean out dead vegetation resulting from an endless cycle of regrowth and retreatment with a systemic herbicide.

But once an area has been cleaned up with Dyclomec, hand labor to remove dead vegetation will never again be necessary because an annual application of Dyclomec will keep the area absolutely clean. How is this possible?

On the page at the right are step-by-step illustrations of how Dyclomec works. Understanding its principle will help you discover the many labor-saving, money-saving ways it can help you in landscape maintenance.

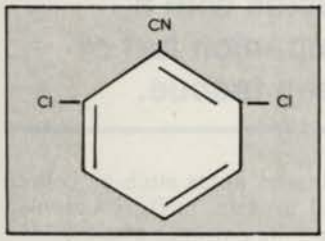
We urge you to read it carefully and call us toll free if you have any questions.

Dyclomec Applicator for Uniform Distribution

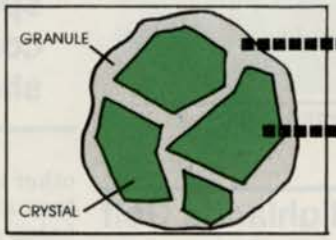
Because proper distribution of Dyclomec is important, this patented Acme Spred-Rite® G Spreader is the ideal tool. Granules are gravity-fed through deflector spikes that give a uniform pattern. Hold the head high for a wide swath; lower for a narrow swath; remove it for the finest line of control. Regulate flow with interchangeable orifice disks. Spreads any granular material. Lightweight. No moving parts.

Dyclomec with its pre-emergent and post-emergent action is ideal for vegetation control in mulch, or bark around roses and ornamentals, or in flagstone and gravel walkways. It works its way down to the ground and forms a vapor barrier which provides season-long weed control and maximum safety to desirable plants.

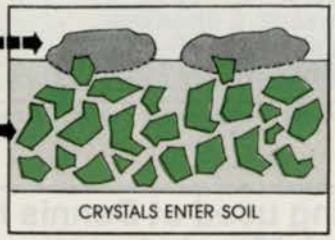
How Dyclomec controls weeds without harming ornamentals:



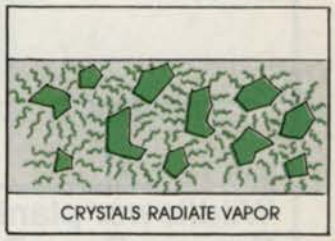
1. Dyclomec is a 2,6-dichlorobenzonitrile, commonly known as Dichlobenil. This unique herbicide goes directly to a vapor stage without going through a liquid stage. It is activated by temperature and soil moisture.



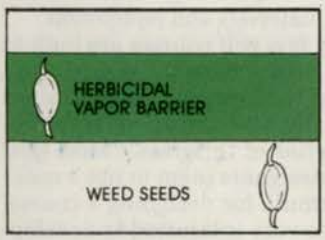
2. This remarkable herbicidal compound of razor-thin crystals is uniquely processed by PBI/Gordon to make a precise granule.



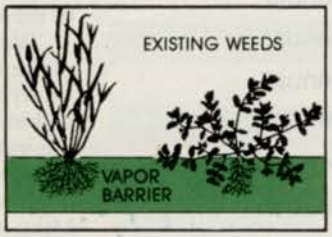
3. Granules are spread on soil surface. Moisture carries the Dyclomec crystals into the upper layer of soil. Because of adsorption by soil particles, lateral movement is minimal.



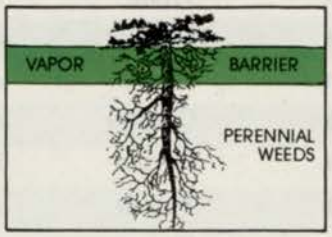
4. Temperature and soil moisture activate the Dyclomec crystals and they begin to radiate a herbicidal barrier. This continues for an entire growing season, and the spent crystals disappear, leaving no residue.



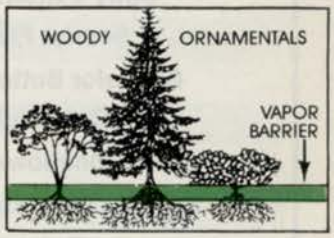
5. In this vapor barrier no plant cell division can occur. Seeds trying to germinate in the barrier will die. Sprouts below this zone will be killed as they try to penetrate the barrier.



6. Existing vegetation such as shallow-rooted grasses and annual weeds having root structures in this barrier will likewise be affected and die after two to three weeks.



7. Certain perennial weeds coming out of dormancy and attempting new growth within the Dyclomec barrier will run into the same dead end: they will be killed by the vapor.



8. Dyclomec, when used as directed, does not affect woody ornamentals, shrubs and trees that have deep roots extending well below the herbicidal vapor zone.

Now available in both 50 and 25 lb. bags.

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Dyclomec 50-lb. bag not available in Washington, Oregon, Idaho.

Call Gordon's Technical Service Department

If you have any questions about where and how to use Dyclomec, we invite you to call us. Our technical people have a combined experience of 95 years in working with the Dyclomec chemical.

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TABLE A

Golf Course Maintenance

Vegetative Type	Maintenance Required	Acres	% of Site	Degree of Maintenance
Completely Natural	None	15	8%*	None
Wildflowers	Mow once/year in November	28	16%*	Token
Roughs	Mow occasionally	87	49%*	Low
Fairways and Tees	Minimal water & Fertilizer applied as needed-Mow 2-3/wk	45	25%	Moderate
Greens	Water-fertilize-spray for weeds, insects & diseases-aerate-Mow 6 times/week	2.5	2%	High

* = 73% of the golf course site receives either no maintenance or low levels of maintenance.

TABLE B

Wildflower planting used at Dennis Highlands Golf Course, Cape Cod, Massachusetts

Variety	Color	Life Cycle
Baby's Breath	White	Annual
Scarlet Flax	Red	Annual
Bachelor Button	Mixed	Annual
Calendula	Orange	Annual
Purple Coneflower	Purple	Perennial
Evening Primrose	Yellow	Annual
Catchfly	Pink	Annual
Corn Poppy	Mixed	Annual
Blackeyed Susan	Gold	Annual
Coreopsis, lance leaf	Yellow	Perennial
Baby Snapdragon	Mixed	Annual
Lewis Flax	Blue	Perennial
Sheep Fescue	Gray/blue	Perennial

Equally important was respecting the fragile environment and ecological balance of Cape Cod.

To do this first required analyzing the soils, the microclimate, and expected climatic factors, then selecting plants compatible with the design intent.

Hurdzan, current president of the American Society of Golf Course Architects and a member of the USGA Green Section Advisory Board, and his partner Jack Kidwell, wanted to design a golf course that didn't just acknowledge the Scottish look, but rather achieved it. It was at this point they contacted Hurley who holds a Ph.D. in plant breeding.

They decided the best way to achieve the desired results was to make plant selections as the golf course was designed, and not simply follow the traditional seeding specifications. They considered the golf course as being composed of five distinct areas;

1 Completely natural
2 Cleared land but out of play
3 Roughs
4 Fairways and tees, and
5 Greens

The only areas they wanted to have intensive maintenance was the greens, moderate maintenance on fairways and tees, low maintenance in rough, and no maintenance in the other cleared areas such as behind tees and greens, buffers between holes, and the entrance areas.

The out-of-play areas were seeded to 13 different wildflower species with a companion turf of sheep fescue.

One reason why some attempts at the Scottish look have failed is that although they look low maintenance, they often require high expenditures of men, materials and equipment.

"Very few golf courses are built to make a visual impact," Hurley says referring to Hurdzan's desire to use esthetically-pleasing as well as durable varieties of turfgrass. "Most (golf course) designers seem to use a cookbook formula for designing a course. Mike was very interested in developing the character of the course. I'm surprised more architects don't do this."

Keys to success

The key to success, thought the planners, was to specify plant materials that had slow growth rates, require little or no fertilization, and are very drought tolerant.

Since all three men were at one time golf course superintendents, they realized that the greatest expense for fairway maintenance was fertilizing and mowing, and for roughs it is mowing alone, often on a bi-weekly basis. Therefore it seemed the logical solution was to plant the fairways to aggressive bluegrass types that would heal quickly when injured by traffic or pests, and reduce the fairway areas as much as possible by planting low maintenance roughs.

From his experience and research,

Get the Intermediate that handles like it can handle the job.

With Sensation's Sensa-Matic steering there's no need to muscle our 48-inch Intermediate mower around tight corners, trees and posts. It handles effortlessly. And, it comes with your choice of 11 or 16 horsepower Briggs & Stratton Industrial/Commercial engines, a full floating deck, anti-scalp protection, a full range of ground speeds up to 6 + M.P.H. and all the rugged durability you'll need to do a professional job. For an Intermediate that can handle it, and a full line of rugged commercial products for all lawn care applications, count on Sensation. For more information contact:

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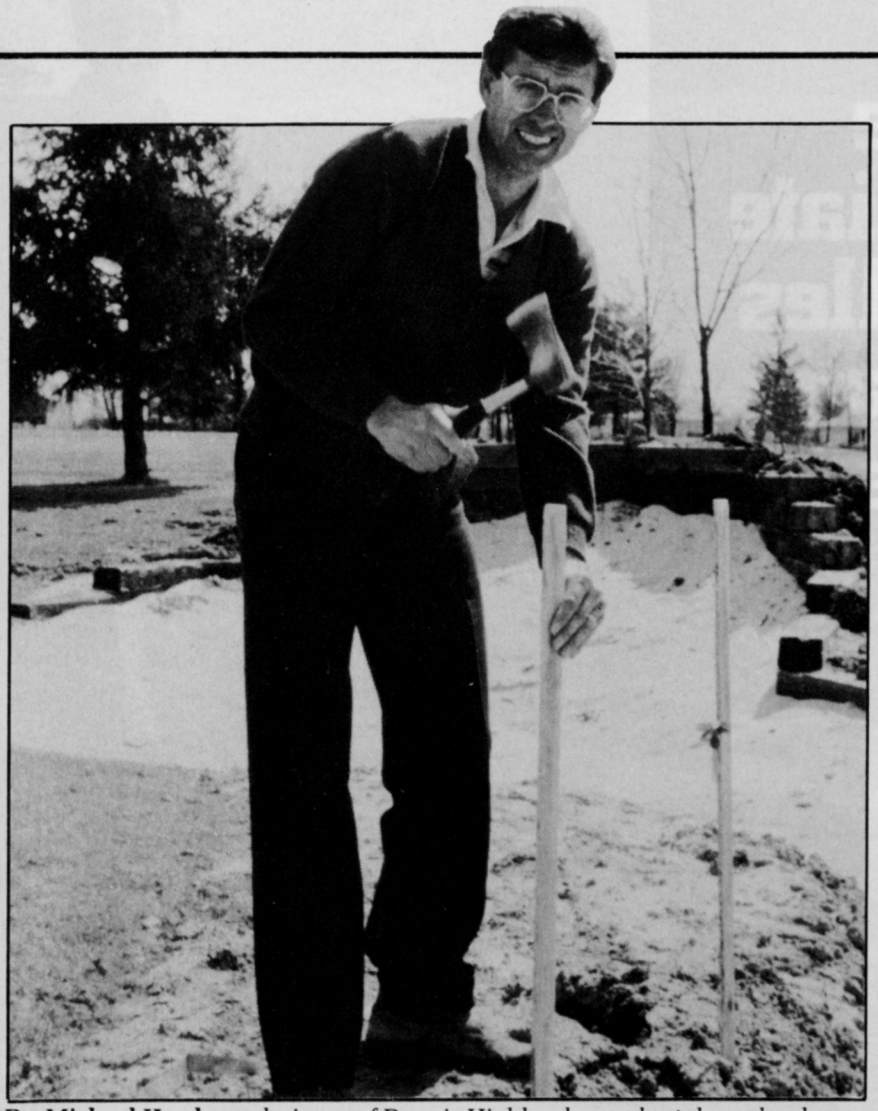

Dr. Michael Hurdzan, *designer of Dennis Highlands, grade stakes a bunker.*

Hurley knew that although bentgrass provides the most prestigious and nicest playing conditions, it is also the most expensive to maintain and is usually reserved for country club-type courses. For public or municipal courses such as the Town of Dennis, a bluegrass-perennial ryegrass turf was needed to withstand the wear of 50,000 rounds of golf per year.

The added benefit is that bluegrass turf requires less spraying of costly chemicals to control turf diseases.

Then came the problem of which of the 50-plus bluegrass varieties on the market should be selected for use on the wind swept, sandy hills of Cape Cod.

They chose a blend of Mystic, Touchdown, BenSun (A-34) and Ram I, supplemented with a small percentage of Palmer and Prelude perennial ryegrasses and Jamestown chewings fescue. This blend was selected because of like texture and color of the bluegrasses to each other, their independent resistance to turf pests, and their observed ability to establish and spread rapidly.

The roughs were seeded by the Delfino Corporation, the golf course contractor, in true Scottish fashion using Reliant hard fescue and Jamestown chewings fescue. The mixture was chosen because of its slower growth rate, resulting in less mowing, while persisting on almost no fertilizer or water.

Further this meant that only a single row irrigation system was needed for fairways which saved money during construction as well as during normal maintenance. The out-of-play areas were seeded to 13 different wildflower species with a companion turf of sheep fescue.

Low maintenance

Thus the basis of the program was to seed as much of the in-play area of the golf course to low maintenance fescues like those found in Scotland, seed fairways to aggressive bluegrass to provide the more-manicured American playing conditions, and other cleared areas to wildflowers and sheep fescue that require no maintenance. (See breakdown of the site, (Table 1).

Since Dennis Highlands has just opened recently, Director of Golf Tom Flaherty could not give exact dollars saved by this concept. However, compared to Town of Dennis' other golf course, (which Flaherty also maintains) the mowing, fertilizing, and watering could be one-third less once Dennis Highlands matures.

The designers decided the best way to achieve the desired results was to make plant selections as the golf course was designed, and not simply follow the traditional seeding specifications.

Other monetary rewards were more evident.

"In the first four months of operation, 30,000 rounds were played and $200,000 in greens fees were collected," reports Flaherty.

Not only was this Integrated Planting System functional from a maintenance standpoint, it also permitted the golf course architects to be more artistically expressive as well.

Palate of color

The fescue roughs were visually different from the fairways in terms of color and texture of the leaf blades, and the wildflowers grew to a height of three feet and produced a rainbow of color from early summer until after several killing frosts in the fall.

These visual differences permitted Kidwell & Hurdzan to make permanent design statements by contour planting as opposed to the less permanent contour mowing.

In addition, the mixing of textures, colors, and heights seem to generate a visual movement of the golf course features, that makes them seem dynamic and flowing and not just

continued on page 62

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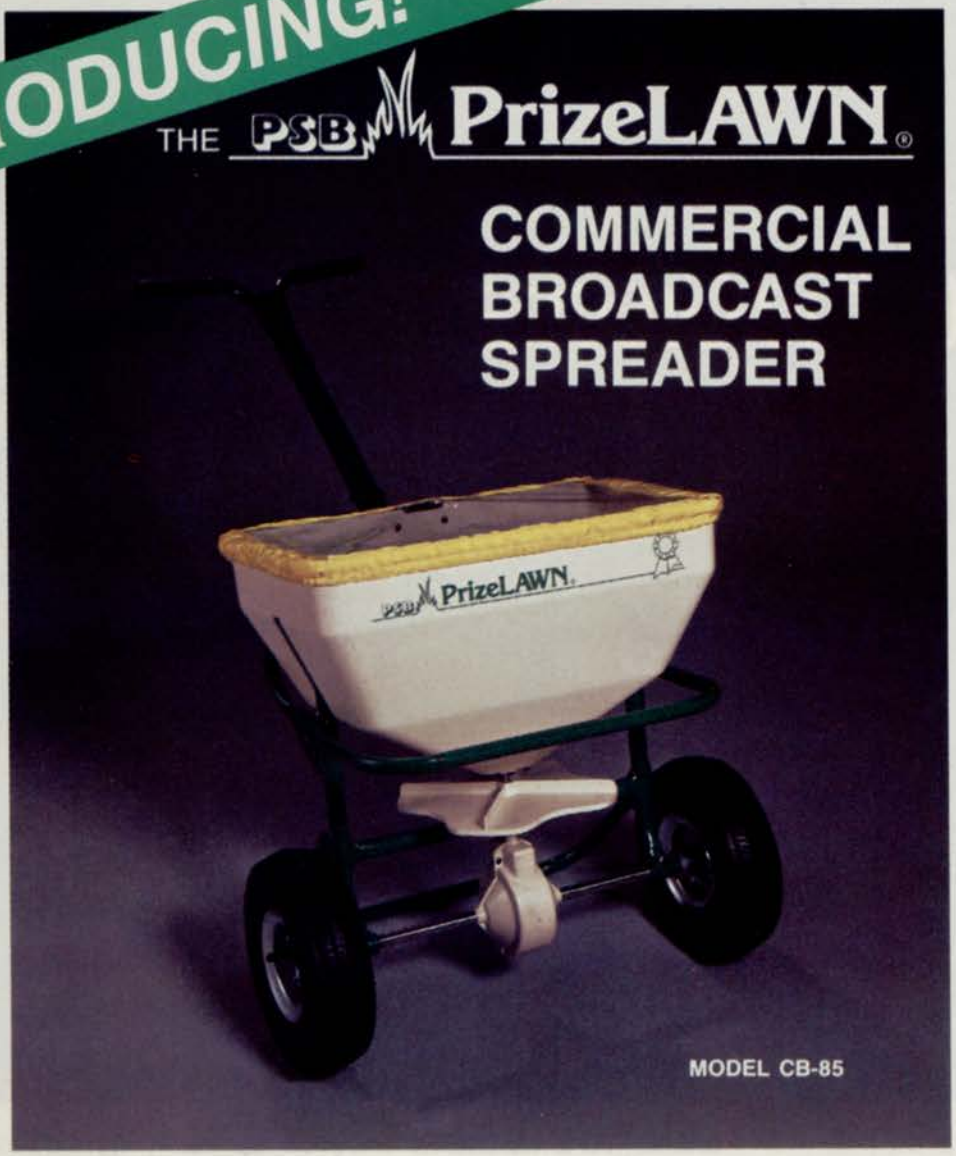

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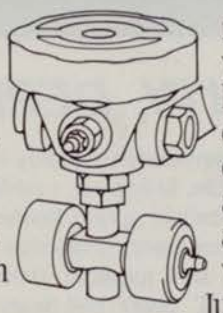
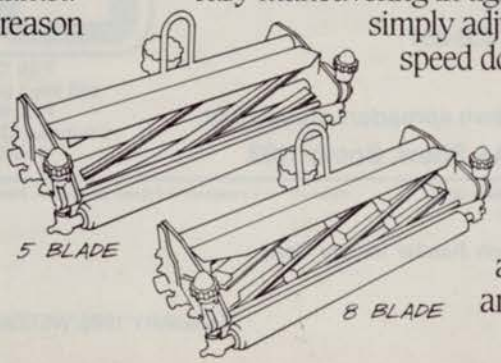


To assure an accurate clip, an optional variable speed kit allows you to select a constant ground speed from 0 to 3.5 mph. For a finer clip at low heights of cut, or for easy maneuvering in tight spots, simply adjust the speed downward.



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earthworks frozen onto a landscape. Further each vegetative type became part of the overall strategy of each hole, defining safe passages and exacting equitable but unusual punishment for improperly played shots.

Hurdzan, realizing the power of this rediscovered palate of colors, began to experiment with techniques once reserved for art done at a smaller scale such as the type done by painters, photographers, and landscape designers.

One example was on the fifth hole at Dennis Highlands where he designed a series of eight mounds in a complex as part of and to protect the green. The largest mounds were closest to the green and they degraded in size as they were built back toward the impact area for the drive. This technique is not new, but planting each set of two mounds to one of four different fescues with the lightest colors furthest from the observer, and the darkest ones closest, to emulate a "Smokey Mountain" image may be new.

To insure that the fescues would persist near the heavily watered green, part circle heads were installed. The intent is to distort distance and the effect is subtle, but it does show the potential for experimentation without being expensive or extreme.

But were Kidwell, Hurdzan, Hurley, Delfino and Flaherty content with their evolving statement of golf course architecture? Not quite.

Ornamental grasses

To supplement the already attractive appearance of the native and planted vegetation, they developed a planting plan for 22 species of ornamental grasses; possibly another first.

Generally, ornamental grasses grow vegetatively through the summer reaching a height of 18 inches for some species to 10 feet for others by September, then they produce beautiful seedheads or plumes which might reach an additional 18 inches to three feet high.

In the south one frequently sees Weeping Lovegrass and Pampas grass on golf courses, but these are not normally winter hardy in the northern latitudes. Since Hurley's hobby is raising northern ornamental grasses, he convinced the team to try them at Dennis Highlands.

... they developed a planting plan for 22 species of ornamental grasses, possibly another first.

At this writing, more than four hundred plants have been placed throughout the golf course to accent capes on bunkers, dress up tees, provide a mild hazard, and complement the existing natural vegetation. Most of the species used are expected to be compatible with the golf course operation and maintenance, forming another link in the Integrated Planting System of Dennis Highlands.

Because this is a first attempt by the men at applying this total system approach, they believe that the system may need fine tuning. But, the young turf is maturing well and the planting zones appear to be stabilized with each other.

Flaherty said some of the wildflowers didn't do as well as expected, but "we caused some of our own problems. The turf encroached too heavily on them," he said.

The need for water and fertilizer keeps the bluegrass confined to the fairway sprinkler pattern, the fescues love the droughty, minimal maintenance of the rough areas, and the wildflowers are, for the most part, thriving in place. However the real key to success of the system is the response of golfers. Will they like it?

For those who have had the good fortune to play golf in Scotland, they have learned to play golf shots off the softer bladed fine fescues used in the roughs, by taking one club longer than normal, swinging easy, and allowing for the ball to run once it lands. These shots are very predictable.

But since not everyone has developed this Scottish playing technique, and such a total immersion may not appeal to U.S. golfers, the fairways will provide the more normal American playing condition of the golf ball propped up by the stiff-bladed bluegrasses.

This two-turf system adds another subtle element that makes playing Dennis Highlands an even more exciting challenge than its middle distance of only 6,050 yards, par 71, would indicate.

Throughout the design and construction process, the planners and builders wanted to provide a golf course that rewards excellent shot making without penalizing average golf play. They sought to match the penalty to the crime, and balance risk with reward for all skill level of golfers.

"The course is an absolute golfing pleasure," says Hurdzan. "It invites risk-taking; the rewards and punishments are commesurate to the risk taken."

The course is then set in a totally coordinated landscape that is esthetically pleasing no matter how well the golfer is playing.

It's hard to lose at Dennis Highlands. **WT&T**

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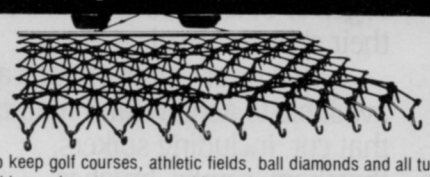

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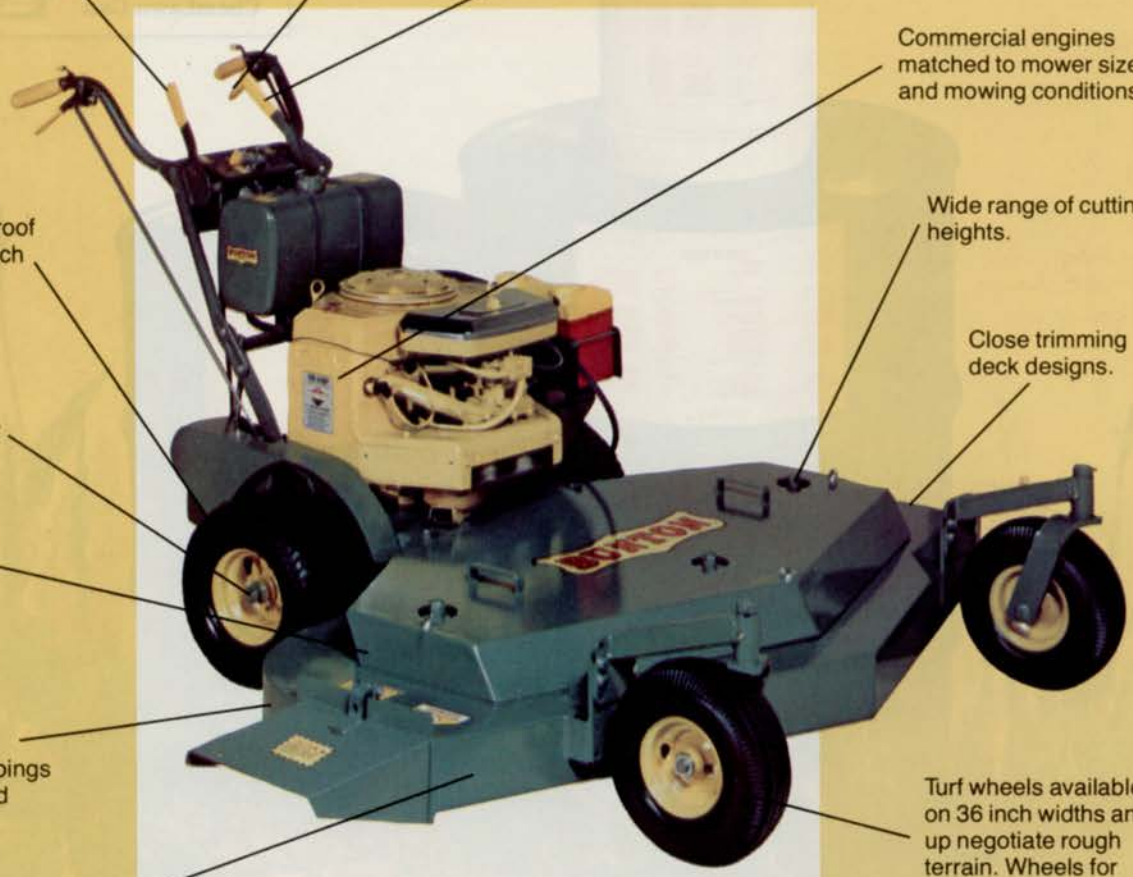

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LANDSCAPE MANAGEMENT

Keeping the new Tournament Players Club at Eagle Trace "tournament ready" is a 365-day-a-year job. This south Florida course is one of the few stadium golf courses in the country. With Fred Klauk Jr.'s brand of course maintenance, Eagle Trace is a champ.

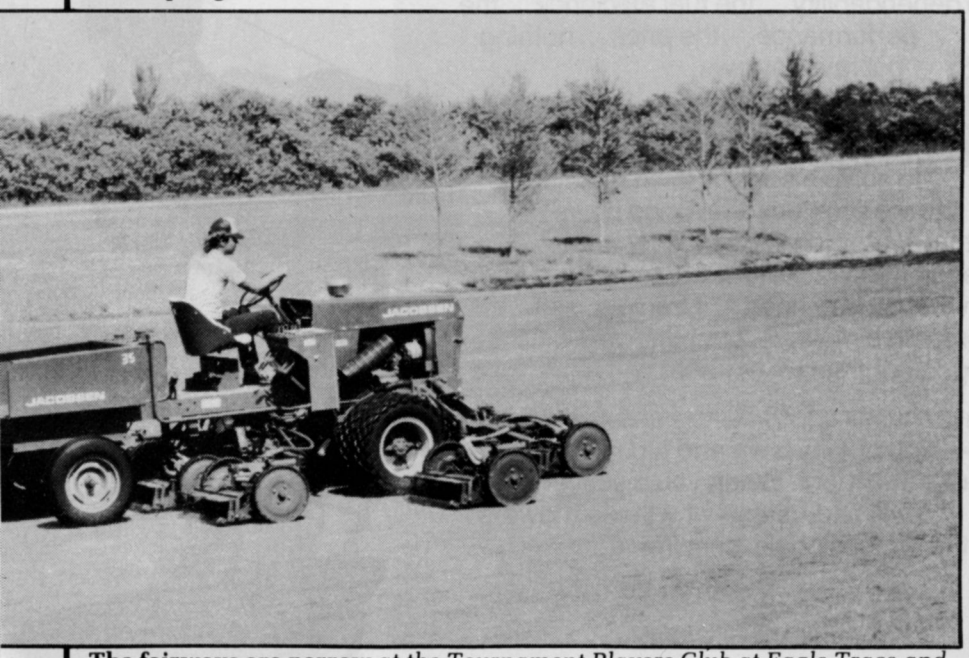
The Eagle Soars

by Ron Hall, assistant editor

Sunshine. Golf. The glamour of the likes of Nicklaus and Trevino.

Fred Klauk, Jr., sometimes wonders if maybe, just maybe, he's getting too much of a good thing. Klauk is the superintendent of the year-old Tournament Players Club at Eagle Trace in Coral Springs, FL. It's the home of the Honda Classic Tournament, one of the early stops for the touring pros. It's also one of the few clubs in the country that is a showcase for stadium golf—complete with spectator stands right on the course.

When winter dumps on most of us again and a wet snow swings in off the Great Lakes where everything is either brown or gray or some strange combination of both, Klauk prowls the green undulations of his manicured course in a powder blue golf shirt. His ever-present hat, a white skimmer, isn't used to keep his ears from freezing and snapping off but to protect his crop of thinning blonde hair from the bright ball of the south Florida sun. His main defense against winter is a chapstick which he flourishes against the ravages of those soft ocean breezes from the east.



The fairways are narrow *at the Tournament Players Club at Eagle Trace and can be mowed with this Jacobsen mower in about five hours.*

Somebody's got to do it. Somebody's got to make the sacrifice.

Why not Klauk? Afterall, he's never held a job that wasn't within a hefty pitch of a green.

Maintenance never ends

But, let's not downplay Klauk's task. Maintaining Eagle Trace is a fulltime job. That's *fulltime* as in 365 days a year. Or as Klauk, located smackdab in the middle of golf heaven, says as he looks upward seemingly in supplication, "It never ends. It just never ends."

Golf is a seven-day-a-week, 12-month-a-year activity here 20 miles or so north of Fort Lauderdale. "We never shut down at all," Klauk explains. "Of course we wear out equipment a helluva lot faster than anybody else. We don't get an opportunity to rebuild our equipment over the winter like we would like to."

There simply is no down time at the Eagle Trace course where a golfer can stop his golf car on the tallest of the many spectator mounds and look out over the Everglades in one direction and back to the palm-lined suburbs of Coral Springs in another. And he'll see green, even in the middle of January. This is a new course, now in its second year. It incorporates new ideas. And it's the new home of the Honda Classic stop for the touring professionals in early March. It still takes some old-fashioned planning and elbow grease to keep it sharp year round.

"We wear out equipment a helluva lot faster than anybody else."

Klauk knows golf

That's the challenge, but Klauk knows something about the game of golf.

Practically a native of South Florida, the 34-year-old Klauk once considered the tour himself, playing well in a number of junior tournaments before ending up at the University of Florida. He found himself in the company of some pretty heady golfing company, guys like Andy Bean and Andy North who, of course, have gone

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on to make ripples in the professional ranks.

"I just like this end of the business better anyway," Klauk, a two handicap golfer says. Anyway, he consoles himself, there's the annual superintendent's tournament. He finished fourth once. Two good rounds in a row. Who knows? Fame on the links, however, finishes a distant second to his maintenance responsibilities. He served first as the superintendent at Johns Island Club, Vero Beach, FL, followed by an eight-year stint maintaining the Pine Tree Course at Boynton Beach. He came to the Tournament Players Club at Eagle Trace in 1983 and helped get the course in playing condition. The course, designed by Arthur Hills, Toledo, OH,opened for play in December 1982.

Fred Klauk, Jr., *walks the 18th hole. The rows of seating will be filled for the Honda Classic in March.*

"I came here right after the Wadsworth Golf Company planted the course," Klauk remembers. "I took over when the TOUR took over in November 1983. The Honda Classic was only five months away. The grow-in process had to be finished and we had to get the greens in tournament condition."

Taking a new course and seeing it through its maturation while keeping it tournament ready for the big money Honda Classic as well as for club members who plunk down as much as

"An irrigation system should be a very simple system"
—Klauk

$25,000 for memberships is a fair-sized responsibility even with a maintenance budget of $440,000. The budget is a bit deceiving. It also includes maintenance of the new $2.5 million club house. Klauk works with an 11-person crew.

Challenging course

The design of the course is both a blessing and a challenge for Klauk and his crew.

Playing just over 7,000 yards the fairways, planted exclusively with 419 Bermudagrass, are narrow, and approach the so-called "target golf" concept. Klauk's crew can mow the fairways with the Jacobsen HF-15 fairway mower in about five hours. "The turf is only one year old," Klauk explains, "so it has quite a bit of growth to do yet. Most Bermuda courses look their best after about three years of maturing." The large areas of rough can be easily handled with a Jake five-gang ramlift.

The greens are handwalked daily with Jake greensmowers, gradually being lowered through the winter so they'll be fast for the pros in early March. They are overseeded with a Penneagle, Penncross bentgrass combination. Klauk watches the overseeding carefully because of the drying winds off the Atlantic. "We've got to be careful because the bentgrass doesn't have an established root system yet," he says. A CBS blend of ryegrasses is used in the overseeding of tees and roughs, usually the first week of October.

In addition to the sand bunkers (the white, coarse-textured sand is trucked in from LaBelle 150 miles away), Eagle Trace has its share of confidence-breaking grass bunkers. Easier to maintain than their sand cousins, the grass traps first found favor at the Tournament Players Club at Sawgrass near Jacksonville.

Klauk says what few disease and insect problems he's encountered so far have not been major. Some leaf spot and isolated occurrences of pythium and brown patch are controlled by the use of standard broad spectrum fungicides, while mole crickets are handled with Oftanol and sod webworms with Dursban.

Although Klauk's crew tried aerating the course with a pair of aerifiers manufactured in Austrailia, they found that equipment hard to control. They use a Ryan Greensaire in spite of the presence of large amounts of crushed coral rock in the soil. "We have to aerify as much as anyone up north," Klauk said of the course which was constructed over a former landfill site. Monthly light topdressing helps control thatch on the Eagle Trace greens.

Irrigation important

South Florida has rain, sometimes lots of it, maybe 60 inches a year. The problem is that it doesn't always fall when you want it too, the reason for the 1,000 Toro irrigation heads. The

Constructive criticism helps Klauk fine tune the Tournament Players Club at Eagle Trace

course is divided into four irrigation sections each with its own controls in the small building which houses the 220-hp pump capable of putting out 2200 gallons per minute. The water is drawn from 25 acres of lakes on the course. The amount of water falling on each green can also be controlled at the 54 control boxes located around the course.

Klauk is leery of the latest generation of computer-operated irrigation systems.

"An irrigation system should be a very simple system," he says. "I think they've (manufacturers) gotten a little bit too sophisticated with some things. I think you need something that is quick to maintain and repair. They've got to remember that we have to be doing this on a superinten-

Palm Desert Greens Country Club is positive proof.

Maintaining one of the heaviest played executive golf courses in Southern California is a challenging job. An average of 290 rounds of golf a day puts tough demands on the turf, and on the irrigation system. That's why golf course superintendent Robert Stuczynski recently installed Weather-matic rotary pop-up sprinklers to upgrade the system at the Palm Desert Greens Country Club.

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dent's schedule. It has to be something we can repair ourselves."

Also falling within Klauk's responsibilities are the 3,000 trees planted as the course was being built. Species such as slash pine, live oak, cypress, buttonwood, and mastic are native to South Florida, while imports such as ficus benjamina, pongram, and black olive give some of the spectator mounding areas a touch of the exotic. Orchid trees with their red flowers blossom several times during the year. Other flowering varieties include bottlebrush, poincianas, and pink tabebuias.

Stadium features

The most noticeable landmarks on the course (discounting the $2.5 million colonial clubhouse and half-million dollar homes springing up in the adjacent private development) are the spectator viewing mounds evident at most of the greens. This allows spectators an unimpeded view of the action on the greens below. The concept, now being known as Stadium Golf, is taken to its ultimate on the 18th green where over mountains earth and hundreds of railroad ties were sculpted into a grassy stadium capable of seating 30,000 viewers.

"Certainly it creates some problems when it comes to maintenance," Klauk says of the stadium 18th. Flymo mowers are handwalked in the seating areas and edges are trimmed with weed-eaters. It usually takes 3½ to five hours to mow and trim the stadium, he points out. The use of slow-growing zoysia grass, however, reduces mowing to just once a month from October to May, maybe twice a month during the growing season.

Thousands of colorful annuals are worked into the rolling contours of the Eagle Trace course

How was Eagle Trace received in its first Honda Classic last march (Bruce Lietzke was the winner)?

"Close to 100,000 people saw the tournament in person," Klauk says. "We had rave reviews. The professionals were pleased with the overall course considering it was so new and their biggest recommendation was to rebuild the 12th green which we did. The criticism we received was very minor. We were extremely happy."

Klauk expects more changes in the future but nothing significant. He says, "I'm sure there'll be a few more changes as we receive constructive criticism from the professionals and the members, but I think Arthur Hills did a tremendous job in designing this course."

As for Klauk, the challenge of keeping Eagle Trace sharp ("We try to maintain the course year round as if we are going to have the Honda Classic tomorrow.") more than makes up 12-month-a-year grind. "I wanted to be associated with the PGA TOUR. Not too many people get to do that," he says. But, when his weeklong vacation rolls around, he usually leaves his clubs behind. He prefers to fish.

(See related stadium golf story, page 30). **WT&T**

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Circle No. 114 on Reader Inquiry Card

The Bent Grasses

by **J.M. Duich, Ph.D.**, Pennsylvania State University, State College, PA

Bentgrasses have been utilized in American turf since the late Nineteenth Century. Native to Eurasia, the bentgrasses were widely distributed by European colonists and first commercialized by English seed companies. Early use was for "wetlands" pastures, followed by golf courses and lawns.

The genus *Agrostis*, according to Hitchock's Manual of Grasses, consists of approximately 200 species plus many subspecies.

Although each is quite heterogeneous (mixed morphological types from seed propagation) there are four commonly accepted as turfgrass types:

1. *Agrostis Palustris* — creeping bent grass
2. *A. canina* — velvet bent
3. *A. tenuis* — colonial bent
4. *A. alba* — Redtop bent.

Origin and types

Creeping Bent: A mixed species type known as South German Bent was first available for sowing of putting greens in the late 1800's. It was harvested from moist soil pastures in present day Austria and Hungary, and later from other areas of Europe.

South German consisted of varying proportions of the four above mentioned species and probably their natural hybrids. Resulting greens turf quickly segregated into predominating patches of individual creeping bents and velvet bent to a lesser extent in more favorable temperate climates.

In the absence of pesticides and turfgrass technology, or until the 1930's, much attention was devoted to the more vigorous and better appearing patches. Vegetative selection and propagation began in the 1920's with the initiation of the USGA Green Section research program at the Arlington Turf Gardens. Similar efforts were practiced by early greenkeepers in their then-secretive methods to practice their trade by themselves.

The C Series—Although many hundreds of segregates were selected and propagated for turf, including over 200 in the "C" series of the USGA, only a handful managed to pass the ravages of nature and man. Among the best were Toronto (C-15) which proved best adapted in the midwest, Cohansey (C-7) with better heat tolerance, Washington (C-50) east of the Great Lakes, Arlington (C-1) and Congressional (C-19) in the mid-Atlantic region, and Old Orchard (C-52) for the upper Midwest. Many others were propagated and used to a lesser extent.

The evolution and use of vegetative bents as single genetic types has

continued on page 76

Segregation into patches *happens quickly with South German Bent.*

August blotches on *Poa annua/bentgrass fairway under level management.*

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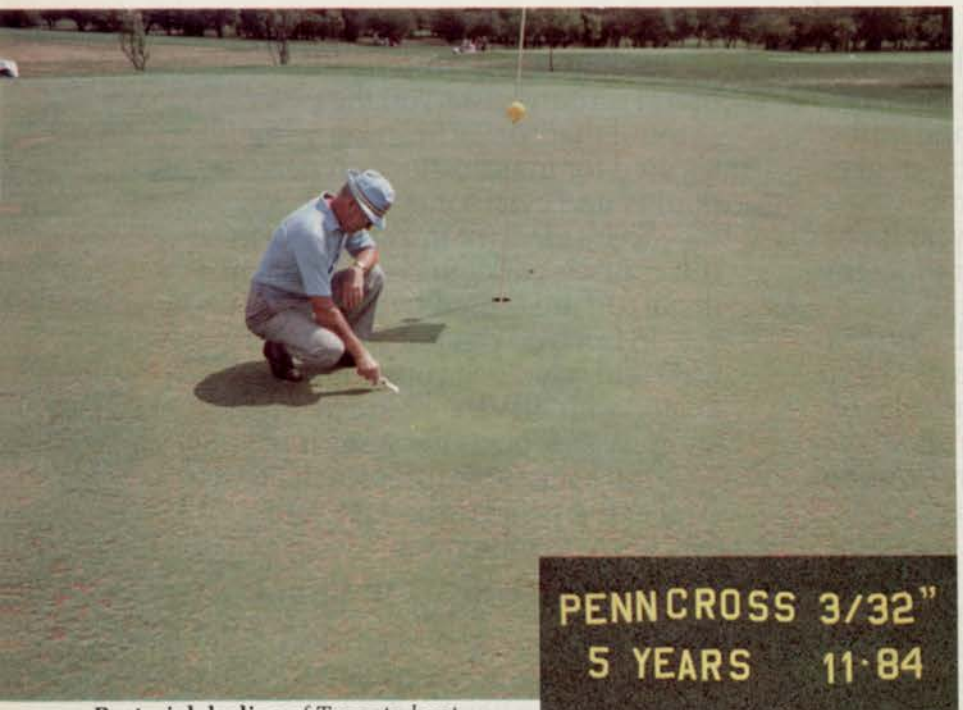
Circle No. 156 on Reader Inquiry Card

BENT GRASS *from page 72*

proven such narrow genotypes cannot long survive in pure form as most recently evidenced by the devastating "bacterial decline" of Toronto bent. Apomictic bluegrasses (genetically uniform) since the advent of Merion bluegrass in 1950 show a similar relapse over time and area to those who monitor the turf scene.



Bacterial decline *of Toronto bent (C-15) except for patch of Cohansey at base of pin.*

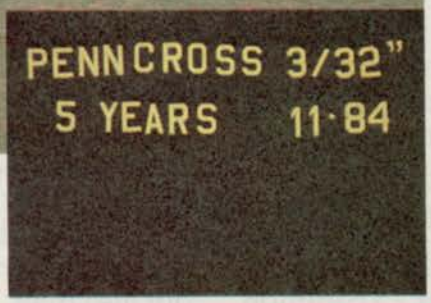
Seaside—The discovery and seed harvest of creeping bent growing in tidal flatlands pastures near Coos Bay, Oregon, in the late 1920's resulted in the first domestic source of creeping bent. Known originally as Coos or Cocoos bent, Seaside has since been commercially available, but many locations and generations removed from the original.

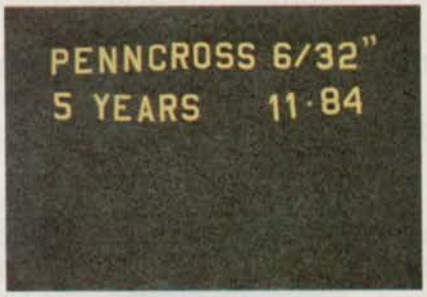
Seaside use increased with the need for a seeded type to repair deteriorated or damaged vegetative greens. Except for a "synthetic" S. German composed of mixing domestic species of bent, Seaside was the only seeded creeping bent available for over three decades.

Penncross—The first seeded creeping bent bred specifically for turf, Penncross, became commercially available in 1956. Its availability coincided with the major northern golf course construction boom which lasted until the early 1970's. During this period, Penncross was used on over 90% of newly constructed courses.

Penncross use increased due to its ability to compete most favorably with *Poa annua*. Secondly, expanded use demonstrated its adaptation to be the widest of any cool-season grass variety. Finally, in conjunction with improved soil modification techniques, the development of fungicides for Pythium, and overall improved management technology, Penncross use extended further and further into the South.

Southern use increased due to a cycle of winterkill of hybrid bermudas and a desire to eliminate the need for winter overseeding. Recent Penncross greens established in the deep south, especially Florida, shall warrant close attention relating to species adaptation and turf management skills.





Algae infestation *on Penncross cut at 3/32-inch is not found on same grass cut at 6/32-inch.*

Penneagle—Penneagle creeping bent (1978) was developed from four advanced generation selections, two each, from Washington and Seaside bents. Penneagle was bred for putting-green-quality upright growth, and vigor to compete with *Poa annua*, although curtailed compared to Penncross. Its use is increasing, particularly in northern areas for fairways.

Emerald and Prominent—Emerald (Smaragd) from Sweden and Prominent from Holland have been commercially available in limited quantities in recent years. Their performance at today's close heights of cut (approximately 1/8-inch) have yet to be proven. Ten year tests at Penn State show both to segregate and unable to compete with *Poa annua*.

Compared to other species, experimental work with creeping bentgrasses is quite limited. Bent improvement for fairways is underway at Rutgers, as well as improved winter-hardy types in Canada. At Penn State, PSU-126 has been distributed to over 100 golf courses in 30 states, Canada and S. Africa. Pending continuing favorable performance, this upright growing creeping bent may become commercially available in 1986.

The greatest single threat facing putting green bent is the season-long practice of excessive close mowing to maintain fast putting speeds.

Velvet Bent: Since its introduction as a component of South German bent, velvet bent attracted attention due to its very dense and fine-textured foliage. Adaptation has been found as best suited to maritime climates, such as upper New England.

Velvet bents are tolerant of acid soils and shade. Upon establishment they must be sparsely fertilized with nitrogen to avoid thatching and sponginess. Former types such as Piper, Raritan Kernwood and various local types are no longer commercially available. Limited seed quantities of *Kingstown*, a University of Rhode Island release, are being produced.

Colonial Bent: Allegedly bunch types, colonial bents are tolerant of mowing under one-inch. Diverse growth habit types include those with short stolons and/or rhizomes. Upon

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being introduced from Europe, the colonial bents have always been identified as ecotypes based on their areas of initial naturalization.

New Zealand Browntop, Prince Edward Island and Rhode Island Colonial were among the earliest "varieties" commercialized. Since the mid-1930's, the Oregon production of *Highland* and *Astoria* bents has prevailed. Highland production exceeds all other bentgrasses tenfold!

Colonial bents were a common mixture component with Kentucky bluegrass and fine leaved fescues for many years prior to the advent of improved varieties. Their general use for this purpose rapidly declined as turf use expanded and the colonials dominated turf stands.

Musser and Duich evaluated the growth habit of 54 colonial bents in 1954. We found 44 of 45 domestic seed lots to contain from 3 to 51 percent stoloniferous types. One domestic and nine New Zealand types contained no stolons.

The main turf use of colonial bents in the U.S. has been for golf fairways beginning with the introduction of irrigation in the 1930's. Use increased in the late 40's as shorter heights of cut plus irrigation eliminated bluegrasses and fescues.

During this period, colonial bents were found to be susceptible to many diseases, i.e. brownpatch, pythium, snowmolds, dollarspot, leafspots and others. Disease problems led to initial fungicide spraying of fairways in the early 1950's. By necessity, fungicide applications became a near weekly practice for some. However, foremost among problems with the culture of colonial bents has been the dominance of invading *Poa annua*.

Triplex mowing, especially with clipping removal, is becoming the most innovative management approach in years.

Varietal improvement has been limited to the non-creeping Exeter, Holfior, and Bardot cultivars. The dominance of lower cost Highland has curtailed consumer interest in these varieties. An extensive program to develop rhizomatous colonial bents is under way at Penn State.

Redtop Bent: Quick germination and seedling growth were virtues for early use of Redtop in turf seed mixtures. However, the overuse of this small seeded grass led to its dominance of new turf stands. As a short-lived perennial, stands quickly deteriorated except for longer lasting rhizome types which are considered weeds. The introduction of turf-type perennial ryegrasses has practically eliminated Redtop as a turfgrass.

Management trends

A major fallacy concerning bentgrasses, particularly the creeping, is that they require high levels of nitrogen, in particular, and water.

For years, texts, articles, and advertisements have stated bent greens need 1 to 1½ pounds N per month of growing season, tees higher yet, and fairways of approximately half these rates. Those utilizing such programs have had to cope with nothing but excesses: mowing, clippings, thatch, puffiness, scalping, grain, aeration, verticutting, spraying,

continued on page 104

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Circle No. 152 on Reader Inquiry Card

A little planning and research on appropriate trees for your golf course can offer big time and money dividends in the long run.

Trees for Golf Courses

by **Douglas Chapman**, horticulturist-administrator, Dow Gardens, Midland, MI

The trick to selecting trees for golf courses is matching their biology with existing conditions on the course. That match has been well developed by horticulturists and ecologists.

A plant management approach would stress that certain trees tolerate and even thrive under difficult conditions while others either die or require intensive maintenance.

Four groups of trees are well-suited for use on golf courses. It is particularly important to recognize that all of these groups of trees will grow under the most favorable conditions but, as oxygen becomes more limiting, fewer trees will tolerate adverse conditions. Groups 1 and 2 will grow under all conditions; Group 3, fewer adverse conditions; and Group 4 will require the most favorable environmental conditions.

Group One: Low Oxygen, Wet Soils

Trees under average golf course conditions must often tolerate low oxygen soils and some flooding. In nature, they frequently grow in swamps and along lake shores or streams.

These trees are best separated into two subgroups; those requiring full sun and those preferring shade.

Full sun trees will take flooding and tolerate low oxygen soils but must receive full sun. These are essentially classified ecologically as intolerant species. (See Tables)

Trees which grow in low oxygen soils, yet perform best in shady conditions, are less numerous. They are frequently swamp plants that grow in either shade or full sun. The key is these understory or specimen plants will grow in heavier soils where other trees might require extensive drai-

continued on page 84

***Celtis occidentalis*, common hackberry,** *is a tree that requires well drained, fertile soil and is good for intensely maintained areas.*

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GROUP 1 —Low oxygen tolerant trees which require full sun
Alnus glutinosa (European Alder)
Fraxinus americana (White Ash) (after it has passed the juvenile stage)
Fraxinus pennsylvanica (Green Ash)
Larix laricina (American Larch)
Platanus acerifolia (London Planetree)
Quercus imbricaria (Shingle Oak)
Quercus palustris (Pin Oak)
Salix spp. (Willow)
Sassafras albidum (Common Sassafras)
Taxodium distichum (Common Baldcypress).

GROUP 1A —Low oxygen-tolerant species preferring shade
Acer saccharinum (Silver Maple)
Aesculus hippocastanum (Common Horsechestnut)
Carpinus caroliniana (Am. Hornbeam)
Crataegus spp. (Hawthorn)
Juniperus virginiana (Eastern Redbud)
Larix decidua (European Larch)
Ostrya virginiana (Am. Hophornbeam).

GROUP 2 —High water table trees
Acer negundo (boxelder)
Acer pseudoplatanus (Planetree Maple)
Acer rubrum (Red Maple)
Aesculus glabra (Ohio Buckeye)
Castanea dentata (American Chestnut)
Chionanthus virginicus (White Fringetree)
Fagus grandiflora (American Beech)
Fagus Sylvatica (European Beech)
Gleditsia triacanthos (Thornless Common Honeylocust)
Juglans nigra (Black Walnut)
Magnolia acuminata (Cucumbertree Magnolia)
Ostrya virginiana (American Hophornbeam)
Pinus albicaulis (White Bark Pine)
Pinus flexilis (Limber Pine)
Pinus jeffreyi (Jeffrey Pine)
Pinus resinosa (Red Pine)
Platanus occidentalis (Am. Planetree)
Quercus coccinea (Scarlet Oak)
Quercus imbricaria (Shingle Oak)
Quercus palustris (Pin Oak)
Quercus robur (English Oak)
Tilia americana (American Linden)

GROUP 3 —Well-drained fertile soil trees
Acer saccharum (Sugar Maple)
Carya ovata (Shagbark Hickory)
Celtis occidentalis (Common Hackberry)
Cercis canadensis (Eastern Redbud)
Cornus florida (Flowering Dogwood)
Liriodendron tulipifera (Tuliptree)
Malus spp. (crab apple)
Ostrya virginiana (Am. Hophornbeam)
Pinus strobus (Eastern White Pine)
Pinus sylvestris (Scotch Pine)
Platanus occidentalis (Am. Planetree)
Quercus coccinea (Scarlet Oak)
Quercus rubra (Red Oak)
Tsuga canadensis (Canadian Hemlock).

GROUP 4 —Droughty site trees
Abies concolor (White Fir)
Betula papyrifera (Paper Birch)
Catalpa spp. (catalpa)
Elaeagnus angustifolia (Russian Olive)
Ginkgo biloba (Ginkgo)
Gleditsia triacanthos (Thornless Common Honeylocust)
Gymnocladus dioicus (Kentucky Coffeetree)
Malus spp. (crab apple) (to a lesser extent)
Nyssa sylvatica (Black Tupelo)
Pinus ponderosa (Ponderosa Pine)
Quercus macrocarpa (Bur Oak)
Quercus velutina (Black Oak)
Robinia pseudoacacia (Black Locust).

nage. These two groups of trees will essentially grow under a wide range of soil conditions but *thrive* in low oxygen soils.

Group 2: High Water Table
Another broad group of plants of particular importance to golf course superintendents are trees that grow in high water table soils but require a well-drained upper 18 inches of the soil profile. These trees do not tolerate flooding but require moisture within several feet of the surface.

It is particularly important to review this list of trees for their adaption or need for a relatively high water table; that is, water within the upper several feet. Many of these trees grow well along the shore of ponds, water hazards, and/or streams.

Ponderosa pine is extremely drought tolerant and adapts well to much of the United States.

Group 3: Well-Drained Fertile Soils
The next group of trees are quality trees for large-area, intensely maintained landscapes. They require fertile, well-drained soils. These trees are the most sensitive to a quality environment while being specific in their requirements.

Group 4: Droughty, Sandy Sites
There are a reasonable number of trees that grow on droughty sites. These plants will thrive as companions with turf while tolerating sandy, extremely well-drained, droughty sites.

This doesn't mean they won't tolerate additional moisture, but they do seem to tolerate droughty sites through a deep root system or as efficient extractors of water.

Other golf course trees

A few types of trees are particularly important because they have contrasting environmental requirements. These include the maples, beech, larch, ash, pine, and oak.

The maple site requirement ranges from trees requiring well-drained, fertile soils to those that survive heavy, low oxygen soils with a relatively high water table.

Acer saccharum, Sugar Maple, requires a slightly acid soil, being partially well-drained and fertile. It does not tolerate salt or air pollutants but is a regal specimen. Silver Maple and/or boxelders grow in a wide range of soils, thrive in a high water table site, tolerate flooding for various periods of time, and exist in low oxygen situations. Contrastingly, Red, Sycamore, and Norway Maples will grow in a wide range of soils, from fertile to heavy clays yet prefer frequent rains normally received throughout the Great Lakes and Northeast areas.

American and European Beech are similar yet have dramatically different pH requirements. American Beech prefers a slightly acid, well-drained soil, tolerating high water tables. European Beech grows best in a slightly alkaline soil but on a broad range of soil types. American Beech transplants with great difficulty and grows best in the Northeast on acid soils, where European Beech transplants quite readily and will tolerate a much broader soil range.

Further, all of the improved beech cultivars, such as weeping ('Pendula), copper leaf ('Riversii'), and fern leaf ('Asplenfolia') forms, are of European Beech. There are no cultivars of American Beech.

European and American Larch grow in a wide range of soils and flourish in high water tables. European Larch is less sensitive to air pollutants yet will not tolerate chlorides. American Larch is extremely sensitive to many air pollutants.

White and Green Ash differ in one key soil requirement—pH. They both thrive on a wide range of soils, tolerate some flooding, and prefer a relatively high water table. But White Ash grows on acid soils (Northeast U.S.), where Green Ash prefers alkaline pH.

Many pines require extremely well-drained soils with high water tables. Scotch and White Pines grow on a wide range of soil conditions as long as the upper 24 inches are reasonably well drained. White Bark, Jack, Limber, Jeffrey, and Red Pines grow on sandy, infertile soil with a perched water table. In fact, they grow better in infertile than fertile soils, e.g. beachhead sand.

Ponderosa Pine is unique in that it grows on well-drained soils but is extremely drought tolerant. Its native range is the Western U.S., yet it adapts to other areas, e.g. Midwest, Central, and Northeast, as long as the soil is extremely well drained. One should take advantage of the unique characteristic—extreme drought tolerance.

Oaks are as varied as the maples. They grow in a wide range of soil conditions from fertile, well-drained soils (White Oak), to heavy, lower oxygen soils (English, Red, Scarlet, and Pin

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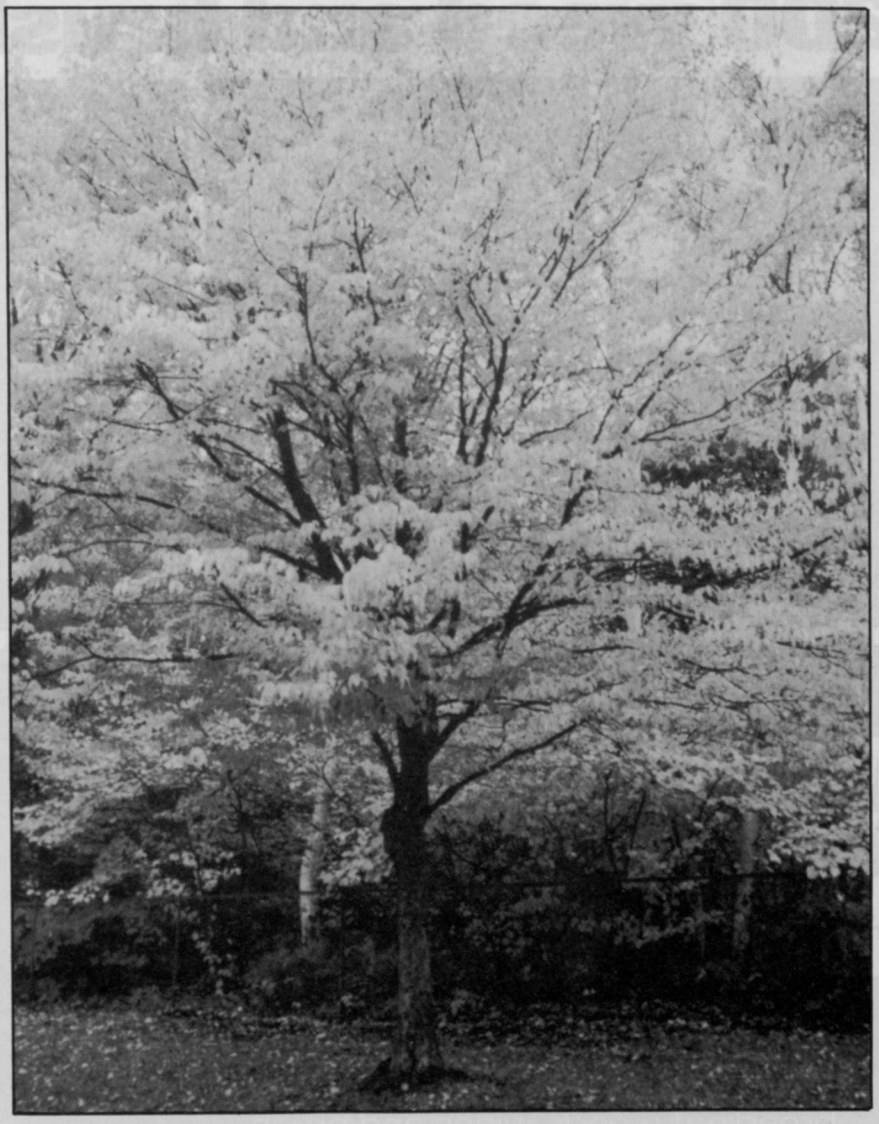

***Ostrya virginiana,* American hophornbeam,** *grows well in a high water table, but requires a well-drained upper 18 inches of the soil profile.*

Oak). Further, Bur Oak (a good companion with turf) has a deep root system while being extremely chloride tolerant.

In fact, Bur Oak, crab apple spp., catalpa, Honey Locust, hickory, and Kentucky Coffeetree are several of the trees to grow in companion with turf as they compete well while not damaging the grass growth.

Bur Oak, crab apples, catalpa, Honey Locust, hickory, and Kentucky Coffeetree compete well with turf without damaging it.

So, "What is a prime tree for a golf course?" A prime tree for a golf course is something that grows well along a water hazard (willow, European Beech, Red Maple), flourishes in competition with turf (Kentucky Coffeetree, crab apple, Bur Oak), or just adapts well to high maintenance, adequate moisture, and good drainage frequently found near tees and greens.

It is up to the golf course architect and superintendent to select trees that match the site and maintenance budget. But, remember there is no such thing as a *bad tree*. When matching biology with environment, each tree species can be best for those conditions. **WT&T**

Douglas Chapman is horticulturist, administrator, The Dow Gardens, Midland, MI, and serves on the WT&T editorial advisory board.

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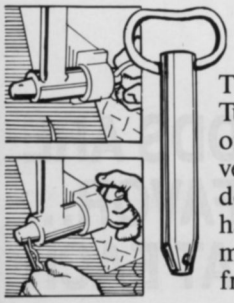

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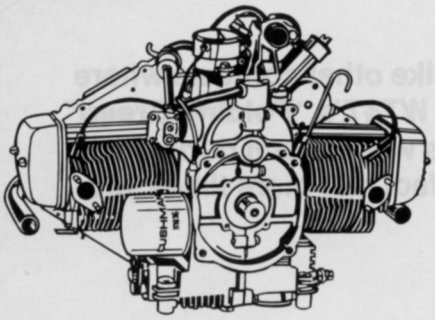

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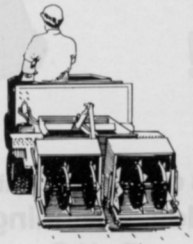

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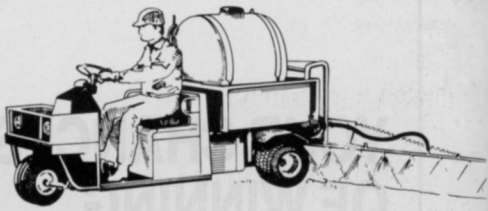

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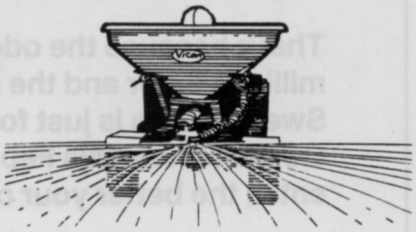

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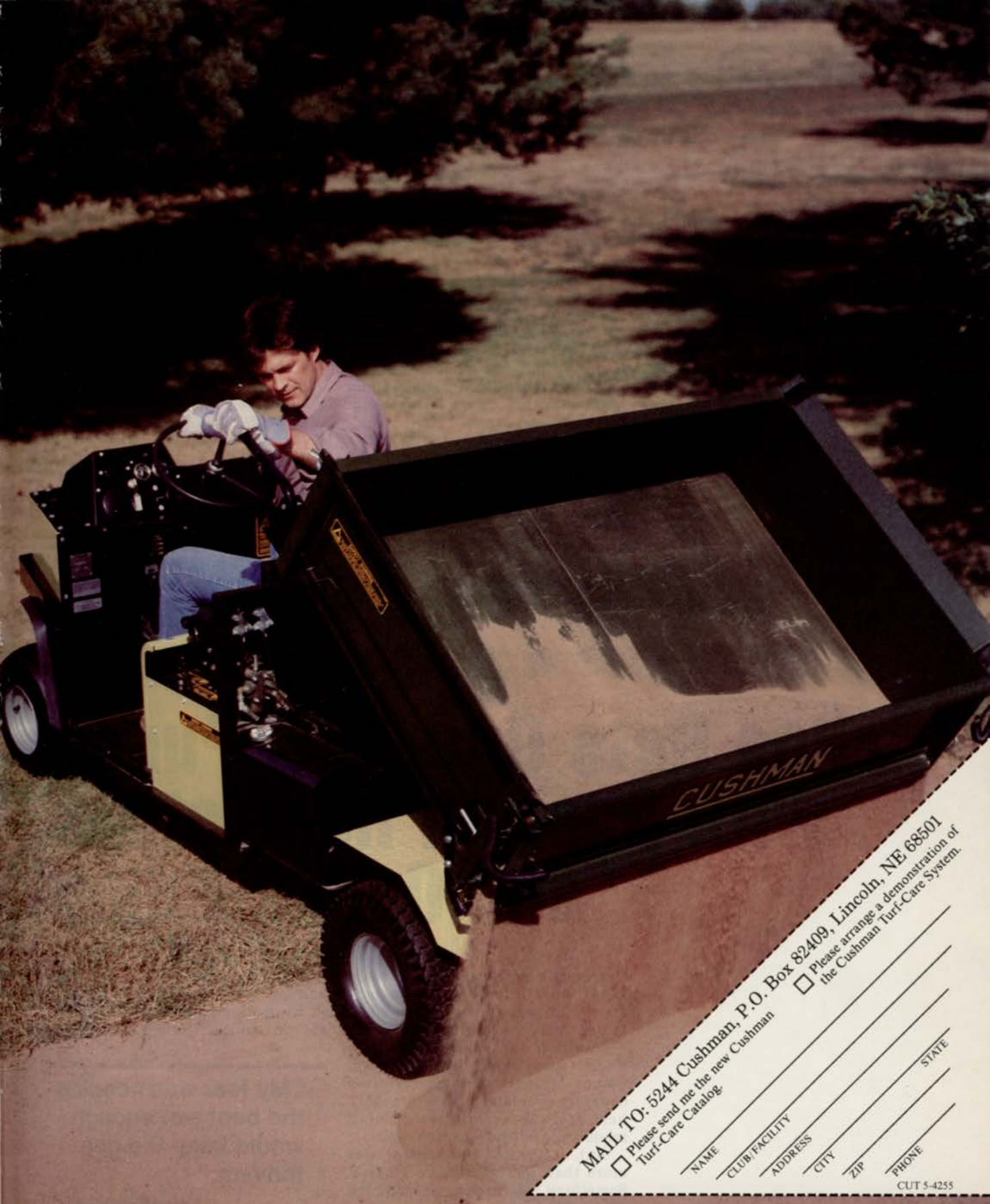

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Poa Gets One-Two Punch with Growth Regulators and Overseeding

Bob Musbach was up against a wall. As superintendent of North Hills Country Club, Menomonee Fall, WI, he'd observed the spread and summer kill of annual bluegrass. It was an epidemic with no cure.

His course has steep southern-facing slopes that soak up the hot sun. Clay soil prohibits water infiltration, and syringing fairways, up to five times a day in the summer stress period, created unacceptable, mushy playing conditions.

After trying bensulide compounds, maleic hydrazide, chloroflurenol compounds, and arsenicals with limited success, Musbach was up against a wall.

"The members were sick of wet fairways from syringing. My fear was to keep the bent wet enough would keep the poa thriving. We had to come up with a witches brew of turf to adapt to the situation," Musbach revealed.

Musbach and his assistant Mark Kienert spent a great deal of time and money trying improved turfgrass cultivars evaluating color, drought/heat resistance and crown depth related to cold and wear tolerance.

But, it seemed the answer was more than just aggressive grasses. Something was needed to stunt the annual bluegrass until the the perennial grasses were established.

What Musbach and Kienert discovered has greatly increased the sales of two products in their area, Rubigan and perennial ryegrass. "The Rubigan suppresses with phenomenal success. We overseeded with rye because it only takes three to five days to establish in our clay soil."

Red Roskopf of Wisconsin Turf Equipment Corp., Dick Baade from Elanco, Dr. Gale Worf of Wisconsin Extension Service, and Marc Grundman of Northrup King have been promoting the growth regulator/overseeding concept, along with light-weight fairway mowers and clipping removal, to other Wisconsin superintendents.

Wayne Otto of Ozaukee Country Club, an 18-hole private course in Mequon, WI, has used a program similar to Musbach's with equal success on fairways.

"We used Cutless on our No. 17 fairway which is about 1.2 acres and a 50/50 mix of bentgrass and poa annua," says Otto.

His maintenance routine included mowing with a Toro GM3 with baskets at 1/2-inch from one to three times a week as needed. He aerified in June and September and overseeded in the same months with Emerald

"My fear was keeping the bent wet enough would keep the poa thriving."

—Musbach

Perennial ryegrass or bentgrass *is seeded into poa-infested areas with with a slit seeder.*

The Poa-busters, *Dr. Gale Work (kneeling), Bob Musbach (hands on hips), and Dick Baade (bending over), evaluate results of overseeding/ growth regulator treatment.*

bentgrass at 20 pounds per acre with each application.

"We had a 4X8 check area on the 178 yard marker," explained Otto. "We had two Cutless applications; in May we applied 1.6 pounds per acre and in August, one pound per acre. The results were dramatic, especially after the spring application."

Otto reports little or no growth of poa for three to six weeks after application. "The bent had good color and there were some stolons in the poa." Otto also reports a 20% reduction of clippings.

Otto thinks he's found an excellent management tool to improve turfgrass hardiness. "This can be accomplished by either letting the existing bent spread or incorporating desirable grass species by overseeding," says Otto.

Otto says he plans to continue his program and use it on other fairways. "Reducing clippings will be a big advantage on fairways where clippings are collected."

Otto thinks he has found an excellent management tool to improve turfgrass hardiness.

Grundman, a turf specialist and regional agronomist for Northrup King based in Illinois, told WT&T the need to find aggressive type turfgrasses is paramount since more golfers are playing more rounds. "The daily fee and semi-private courses are receiving more play and need turf to withstand that play," says Grundman. "Private courses are looking for more disease resistance."

Grundman is very much in favor of working with Mother Nature and using grasses in a natural selection process. "Knowing what grasses to grow where for the situation that exists is the key," Grundman explains.

Grundman says there is some concern that Rubigan will shorten the root system of other plants. Grundman says he has seen another product, Prograss, kill poa and perennial bluegrass species, but leave rye alone. **WT&T**

(See related story next page.)

Competitiveness of Ryegrasses with Annual Bluegrass

by R.W. Daniels

Reality is that until *Poa annua* can be eradicated, turfgrass growers must try to manage the existing invasion of this turf species.

Research performed at the Nova Scotia Agricultural College during 1983 was directed to:

A reduce the invasion of annual bluegrass in a turfgrass stand and,

B reduce the decline of this species in turfgrass where it presently exists.

All experiments have been conducted both in growth chambers and field plots.

Long term (three years) effects of competitive factors will be evaluated.

Test results

Annual bluegrass (*poa annua* L) and five perennial ryegrass cultivars, Citation, Derby, Linn, Loretta and Manhattan, grown in monoculture and in competition with annual bluegrass were compared in a controlled environment pot culture.

Ryegrass cultivars grown in monoculture showed a wide variation in their competitive ability as evaluated by number of tillers, leaves and total leaf area.

These same factors made them competitive with annual bluegrass. The ryegrass cultivar Citation was the most competitive against annual bluegrass. All other tested cultivars were about equal in competitive ability. Little difference between cultivars was evident in terms of fresh weight and dry weights of tops and roots of the plants.

To reduce the decline of annual bluegrass and evaluate the performance of ryegrass cultivars as competitors in established turfgrass stands, various forms of nitrogen were used.

All cultivars of perennial ryegrass Citation, Linn and Manhattan and annual bluegrass were fertilized with NH4 (ammonia form of nitrogen) and NO_3 (nitrate form of nitrogen). Ratios of NH_4:NO_3 used were 100:0; 75:25; 50:50; 25:75 and 0:100. The ratio of NH_4:NO_3 of 25:75 produced the most superior turfgrass plants in terms of competitiveness (number of tillers, leaves and total leaf area.)

In fact, all plants evaluated responded best to this fertilizer ratio. The second best ratio of NH_4:NO_3 was 50:50. The poorest plant growth was from plants fertilized with NH_4:NO_3 ratio of 100:0. □

Daniels is a professor at the Nova Scotia Agricultural College. Reprinted from December, 1984, *Greenmaster*.

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Circle No. 118 on Reader Inquiry Card

PROBLEM SOLVERS

By Balakrishna Rao, Ph.D

Silent killer

Problem: *Three years ago we bought a house on a lovely treed site. Of course we paid more because of the beautiful trees. Now nearly all of the trees within sight of the house are dying or dead. I've had several tree companies tell me it's "construction damage." What do they mean and what can we do to save the few trees that haven't died? (Wisconsin)*

Solution: Your situation, unfortunately, is not uncommon. Construction damage occurs primarily because of site development practices, which are expedient but also are death to trees. Most of the tree problems boil down to root loss and wounding. Trees and tree roots need water, nutrients, and air (oxygen) to live and grow. When the grade is lowered, roots are severed, wounded, and otherwise destroyed.

When the grade is raised, as by fill, the root system is buried and the roots do not get enough oxygen. The soil on building sites is usually compacted by heavy equipment run over and building materials piled on top of it. Compacted soil contains smaller openings (pores) than undisturbed soils. Rainfall runs off rather than into the soil.

An important function of roots that requires air is movement of soil-borne nutrients into the tree. Frequently the upper layer of soil (topsoil) is stripped away leaving behind the heavier subsoil. Topsoil is the soil layer (horizon) of highest organic content. Bacteria, fungi, and other organisms living in the topsoil convert mineral nutrients to forms the tree can use. Subsoil retards plant growth because it is heavier (denser) than topsoil, has less organic matter and because it lacks or contains fewer beneficial microorganisms, i.e., mycorrhizae. The tree, because its root system has been impaired, is not getting enough water and nutrients to sustain itself much less increase in size. In many cases the construction damaged tree is barely alive. It is well known to tree experts (arborists) that stressed trees are more likely to become diseased or attacked by insects. Because the trees resistance is down, they often succumb to secondary agents such as borers and decay fungi.

It can take as long as three to seven years after construction before the damage is obvious above ground. Dead and dying trees are the end result. Less obvious are the following dieback and decline symptoms which precede death and indicate that the tree is in trouble. Individual branches die from the ends back toward the trunk (tip dieback). The entire tree dies progressively from the outside inward and/or from the top down. The leaves are off-color, often yellow (chlorotic), and undersized (stunted). Leaf margins and areas between the veins may turn brown (scorch). Other features indicative of construction damage, particularly a change in grade, are trunks with no flare or taper.

Trees do not enter the soil like telephone poles. Tree trunks are normally wider near the soil line. Some trees have buttress roots which flare out from the trunk. Wounds provide openings for decay fungi. The presence of conchs, bracks, and mushrooms on the trunk and branches or arising from roots are signs that decay organisms are present. What can be done for the tree once these signs and symptoms are present? Basically three things:

1 fertilize
2 aerate, and
3 water

Fertilizer will stimulate root and shoot growth. Fertilizer invigorates the tree, making it more resistant to pests. Aeration permits air to reach the roots and increases oxygen levels within the root zone. Root growth is improved, and more roots can move more nutrients and water into the tree. Trees with damaged root systems cannot tolerate droughts and must be watered during rainless periods.

Supplemental watering, usually the homeowners responsibility, must not be overlooked.

Pesticides are needed to protect the trees from additional stresses. Even with proper remedial treatment full recovery or 100 percent survival rarely, if ever, occurs. A better approach is to change site development practices. If at all possible,

1 Don't strip or permit removal of the topsoil.
2 Don't disturb or change grades within the root zone.
3 Don't pile anything on top of the existing soil around a tree.
4 Keep construction equipment, trucks, and other machines away from the trees.

In other words, do not do anything which would adversely affect the roots. Sad experiences such as yours affirm that it is better to treat the trees properly before the damage occurs than to try to save them after the damage has been done.

Tall fescue is stubborn

Problem: *Is there any chemical which can be used on Kentucky bluegrass lawns to selectively remove tall fescues? (Michigan)*

Solution: At the present time there are no chemicals on the market registered for selective removal of tall fescues from Kentucky bluegrass lawns or other turfgrass lawns. However, reports from South Dakota suggest that Hoelon, a herbicide manufactured by American Hoechst Corporation, is showing good results in controlling tall fescues in Kentucky bluegrass lawns.

Hopefully, we will see this product labelled for turf use in the near future. **WT&T**

Balakrishna Rao is Director of Lawn Care Technical Resources for Davey Tree Expert Co., Kent, OH.

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Circle No. 105 on Reader Inquiry Card

Insect control top priority for Fla. courses

by Shelly Sorkin

The cost of an unchecked insect infestation is no secret to golf course superintendents, especially those in Collier County, FL, where there are more than 30 executive and regulation golf courses for 90,000 residents.

"Maintaining the county's courses to professional standards without destruction from insects and weeds is vital to the county's economic stability," notes Charlie Lowery, Collier County extension agent.

The importance of golf as a business in Collier County is indicative of Florida as a whole. There are approximately 730 golf courses in the state serving local residents and millions of tourists each year.

In southern Florida, sod webworm is particularly damaging to St. Augustine, bermudagrass and bahiagrass from April through December.

"The effects of uncontrolled sod webworm infestation are devastating," says Dr. Jim Reinert, entomologist who just moved to Texas A&M University from the University of Florida. "Without any control measures, a golf course can be stripped to bare stolons!"

While at the University of Florida, Reinert conducted several studies to evaluate the effectiveness of a variety of insecticide programs. One such test compared about 15 turf insecticides for sod webworm, including the newly-registered Orthene for turf.

"The test plots showed an average population count of 38 to 39 sod webworms and other insect species per four square feet," says Reinert. "All the products offered control, but within four days of applying 1-1/3 to 2-3/4 pounds per acre of Orthene, the population was reduced to zero."

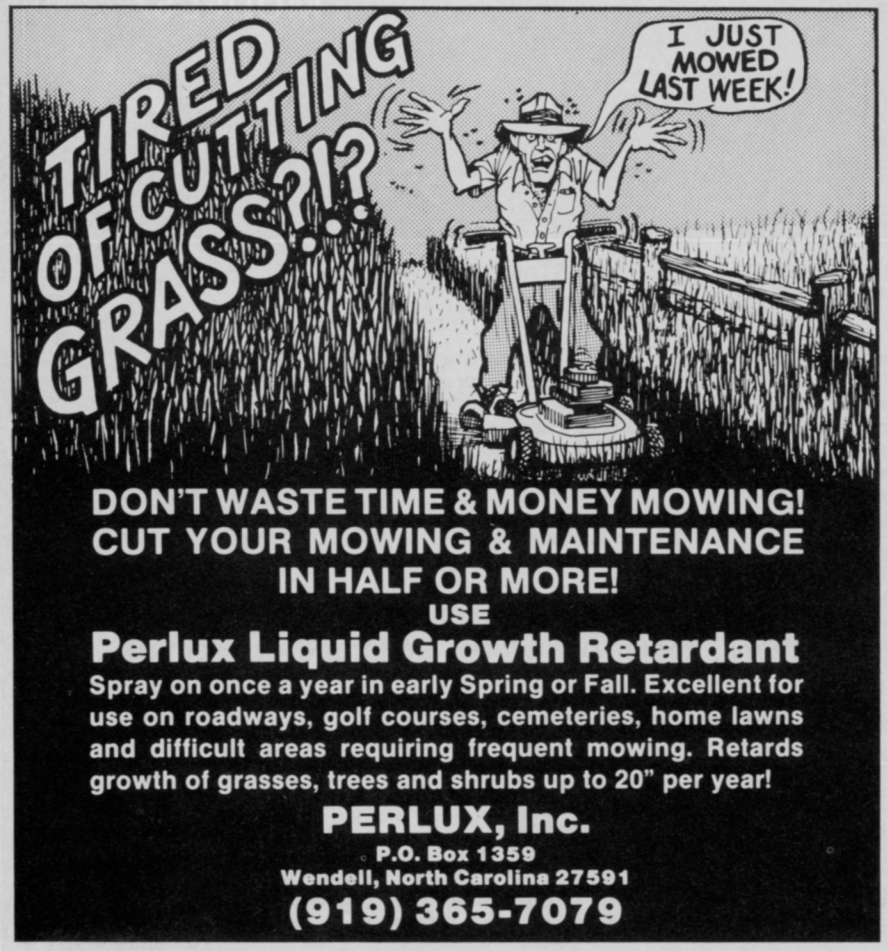
In addition to bermudagrass, bahiagrass, and St. Augustine, Orthene can be safely applied to dichondra, bluegrass, fescue and bentgrass.

Broad spectrum insect control is the main concern at Royal Poinciana Golf Cub in Naples. Caterpillars, aphids, thrips and host of other tree, ornamental, and turf insects on 440 acres were the responsibility of superintendent Clint Smallridge, C.G.C.S., until recently.

"Many of our plants are sensitive to chemicals," Smallridge pointed out. For example, malathion and diazinon will defoliate hibiscus. Orthene, on the other hand, won't hurt the existing plants and offers the needed insect control without the worry of plant replacement."

Smallridge accepted a position with LESCO last November to develop a series of wholesale stores in Florida.

With 14.3 million golfers playing more than 15 rounds per year, and 3.5 million occasional golfers, a great deal is on the line. As Lowery says, "Golf course maintenance is more than just maintaining a golf course...It's also marketing and public relations. It's made a little easier with the help of effective chemical control measures." **WT&T**



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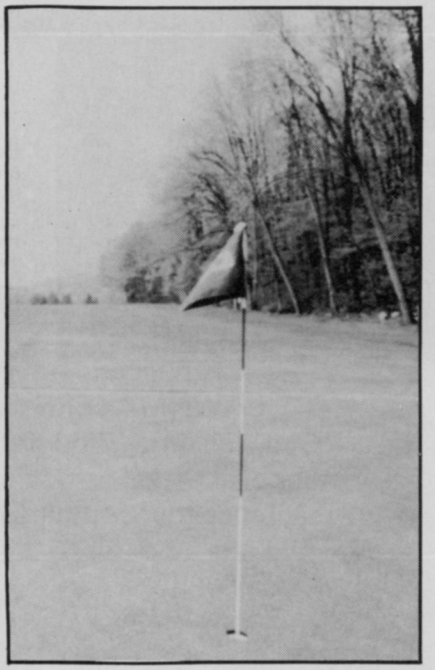

In southern Florida, *university and extension testing compared 15 turfgrass insecticides for control of sod webworm infestations.*

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International Erosion Control Association Conference, Feb. 23-24. Fisherman's Wharf, San Francisco. Contact the IECA, P.O. Box 807, Freedom, CA 95019.

Nassau/Suffolk Professional Turf and Plant Conference, Feb. 25. Colonie Hill, Hauppauge, Long Island. Contact NSLGA, 59 Orinoco Drive, Brightwaters, NY 11718. (516) 665-2250.

South Carolina Turfgrass Association Ground Maintenance Short Course, Feb. 27. Holiday Inn-Northeast, Columbia, SC. Contact Paul Ellis, III, City of Greenville Parks and Recreation Department, P.O. Box 2207, Greenville, SC 29602. (803) 233-8158.

Midwestern Chapter International Society of Arboriculture joint meeting with Nebraska Arborists Association, Feb. 27-March 1. New Tower Inn, Omaha, NB. Contact James Rocca, Conservation Department, P.O. Box 180, Jefferson City, MO 65102. (314) 751-4115.

North Dakota Turfgrass Workshop, Feb. 28-March 1. Town House Motor Hotel, Fargo, ND. Contact Cynthia Ash, Box 5012, North Dakota State University, Fargo, ND 58105. (701) 237-7854.

MARCH

Canadian Turfgrass Conference, March 3-6. Winnipeg Convention Centre, Winnipeg, Manitoba. Contact Mary Gurney, 698 Weston Road, Toronto, Ontario M6N 3R3. (416) 767-2550.

To insure that your event is included, please forward it, 90 days in advance, to: WEEDS TREES & TURF Events, 7500 Old Oak Boulevard, Cleveland, OH 44130.

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tion systems for each component of the course such as greens and tees, fairways and roughs, and trees allows each of these areas to be watered selectively and yet adequately.

Under the strictest conservation practices, an average three to four acre feet daily is required to maintain Cathedral Canyon's 191 acres and 20 lakes. This amount can increase to as much as eight to 10 acre feet daily during the initial 12 to 15 day period of the overseeding process. Multiply that times the number of courses in the area, and water woes are justified.

Says Caranci, "The day is coming when that drop of water will be just like the food you put on the greens to keep them green. Water will be critical."

Labor

Skilled labor is plentiful in the region. Most crews are unionized, well-paid and so secure in their jobs that turnover is minimal. An average tenure of 15 to 25 years is not uncommon. The average superintendent holds his position for about five years before moving on.

Salaries vary according to the wealth of the club and the background skills the individual possesses. Terry Lortz observes, "When a superintendent is a working superintendent and must be a jack-of-all-trades, they are underpaid."

Bud Lombard adds, "Here it is a 12 month job. In general, superintendents are paid a little more than in other areas, but, in most cases, it is probably not enough considering the hours they have to put in and the perfection that is expected."

Mongiello contends superintendents are a unique bunch of people, "they are highly critical and very creative. Everyone has different standards for reimbursement. Some want to be rewarded with tangible rewards like money. Vacationers pay high dollars to come here. I work here, in a Garden of Eden. Part of my reward is that when I drive out of here and I can look back and say 'isn't that something beautiful I've created.' Most successful superintendents are rewarded in many ways for their efforts."

The area is also fostering a new breed of superintendent; one as well-versed in budgets and management as he is in agronomics.

Mongiello of Eldorado typifies the best of both worlds. He holds a university degree and maintains a private research station at the course where he runs test plots and is capable of diagnosing and prescribing when disease and insect problems arise.

The Hi-Low Desert Golf Course Superintendents Association is a good example of the changes that have taken place over the last 10 to 15 years among golf course superintendents.

No longer principally a social organization, the members pride themselves on the quality of their educational programs and the camaraderie of the association's membership. Approximately 60 percent of the area's superintendents belong.

The association provides a monthly forum for sharing concerns and solving mutual problems. They are eager to help newcomers with the backlog of their experience. The success of any one of them reflects on them all. **WT&T**

Hartley Bennett is a freelance writer living in Riverside, CA.

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BENT GRASS *from page 78*

Poa annua, watering, and stress.

At one-fourth to one-third of the above rates, bentgrasses can be among the most hardy of manicured grasses.

The basic rule in successful long-term management of turf is to maintain the foliar canopy as close to the ground surface as possible. This is especially true of creeping bent for all purposes.

Practices leading to excessive thatching should be avoided as thatch is the greatest single limiting factor in successful turf culture. Those adheering to modest fertility programs and thatch prevention have discovered that water needs can be reduced by up to 75%!

The single limitation of low fertility programs on bent is the prevalence of dollarspot diseases. Fungicides for this problem are much more economical than the alternatives. The author advocates the precise use of herbicides for weeds rather than the over-stated maxim that "the best weed control is a dense turf".

The greatest single threat facing putting green bent is the increasing *season-long* practice of excessive close mowing to maintain fast putting green speeds. Varieties have yet to be developed that can perpetuate themselves at constant mowing heights of approximately 1/8-inch. This is particularly true of greens with inadequate soils, play in excess of 20,000 rounds, and the ravages of open or icy winters.

The use of water to provide optimum resiliency serves to compound all problems, especially *Poa annua* invasion. The author has seen more algae and moss on greens in the last two years than in the previous 20 years combined.

Conversely, most greens can tolerate a gradual height reduction for a short period. Our research has shown that firm greens surfaces, lower overall fertility, double mowings, and even rolling can serve as adequate substitutes to lower mowing.

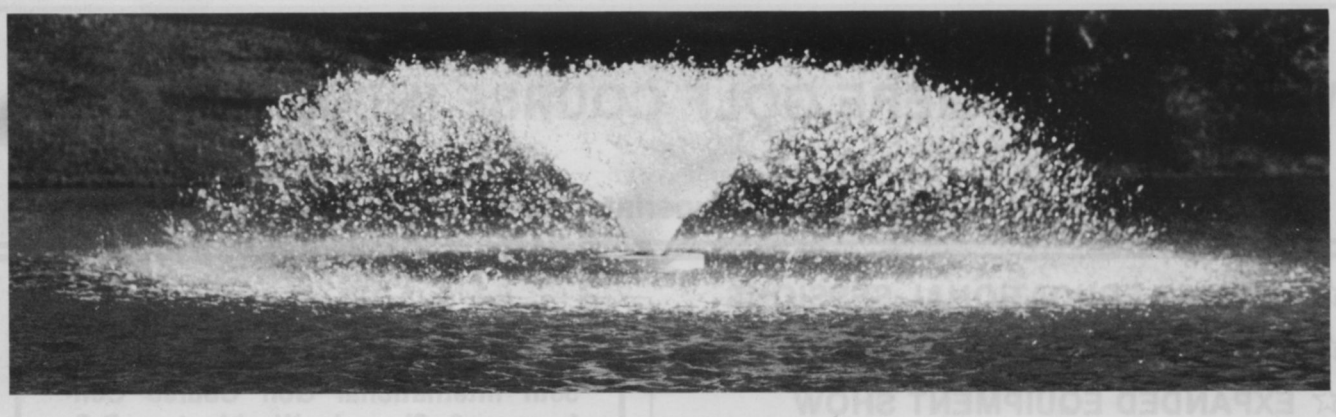
Poa annua dominance of close-cut, irrigated fairways has been a major problem faced by golf superintendents. The rationale of using colonial bents has generally been unsuccessful. Triplex mowing of approaches, especially with clipping removal, has long been observed to result in bentgrass dominance. Most dramatic improvements are now being achieved on fairways with the presence or reseeding of *creeping* bents.

Triplex mowing without the explanatory benefit of prior research is becoming the most innovative management approach in years. Modest fertility and irrigation, effective aerification and use of creeping bent are keys to the rapid demise of *Poa annua*.

Reseeding effectiveness requires a timing of approximately one month prior to the cool weather germination of *Poa* in the fall. Timing is most important regardless of whether chemicals such as Roundup are used.

Sulfur for acidification, new growth regulators and retardants, and preemergence and postemergence chemicals for *Poa* are proving effective. Above all else, drainage is basic, and remains the first step in species conversion and culture.

In summary, one must recognize that of all the major grass species, we have had the fewest number of varietal improvements with the bents. Proper use and management of what we have is proving creeping bent to be the most effective grass available for close-cut turf culture. The *T Poa annua* era shows signs of diminishing. **WT&T**



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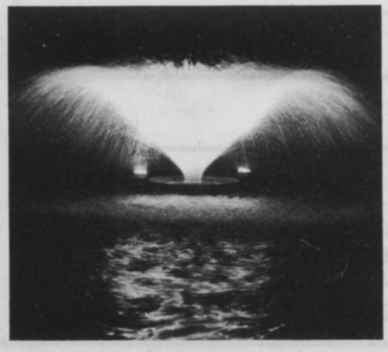

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Micro Backhoe solves tight access problems

Sarna's Sales of Gardena, CA, offers the Powerfab 125/WT self-trailering Micro Backhoe.

It is designed to solve the problems of tight access, narrow widths and confined areas.

The one-man operated machine reduces costly labor and subcontract costs. It will eliminate most hand-digging operations.

Three models are available with 5 hp and 10 hp Honda engine configurations. It has a tearout/ripping force of 1.72 and 2.0 tons, digging depths of up to 7.5 feet.

Another unique feature allows the Powerfab to go through gateways, restricted pathways and other openings down to 28 inches wide.

Digging buckets are from 8 to 24 inches wide; the backfill blade is 4 feet wide. Comes with street pads and a specially-fitted unit with hydraulic power take-off to run concrete breakers, chain saws, limb-loppers, post hole auger, soil tamper, sign post driver, winches and many other hydraulic tools.

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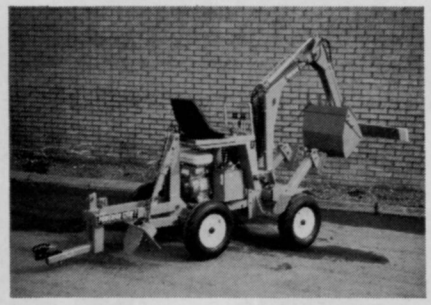
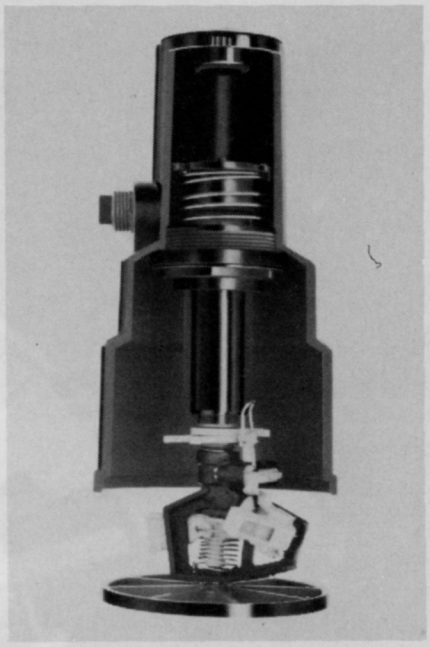


Economical rotary sprinkler introduced

Weather-matic's new 3100 Series rotary sprinkler offers a variety of standard features at an economical price.

Constructed of durable plastic, these medium range sprinklers are suitable for residential, light commercial and other similar turf areas.

Low pressure operation makes the 3100 Series ideal for energy efficient systems or problem areas, in which water pressure fluctuates with heavy use.



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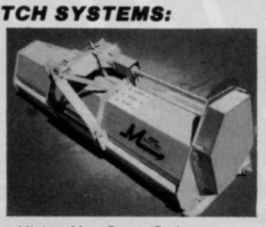

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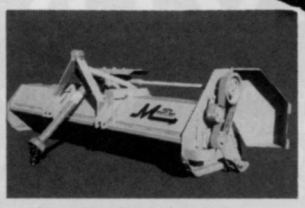

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Vorlan's effectiveness — because it takes so little and lasts so long — also makes it economical, too.

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A side splash control arm minimizes wasted water by restricting water spray only to areas in which coverage is desired. The 4-1/4-inch compact cover reduces the chance of breakage and pedestrian hazard.

Design flexibility is built-in with a trip lever that instantly converts sprinkler from full to part circle, and easy-adjust collars that allow an arc selection from 20 degrees to 340 degrees. A choice of three nozzle sizes also increases design versatility.

Circle No. 191 on Reader Inquiry Card

Bunton Multi-Trac is versatile machine

Bunton Co. has introduced its new Multi-Trac, a multi-use tractor that is equally suitable for professional grass-cutting, snow clearing, brushing and use as a forklift.

It is easily changed from one use to another without tools. Both five and seven gang reel mowers are available, as well as three gang flail mowers and three gang rotary

mowers. Additional attachments include side mounted flail cutters, forklift, bucket, sweeper, dozer blade and snow blower.

The cutting height of the reels is adjusted from inside the tractor cab, and because of the advanced hydraulics employed, weight distribution is easily transferred to and from the drive wheels to increase traction for hillside work.

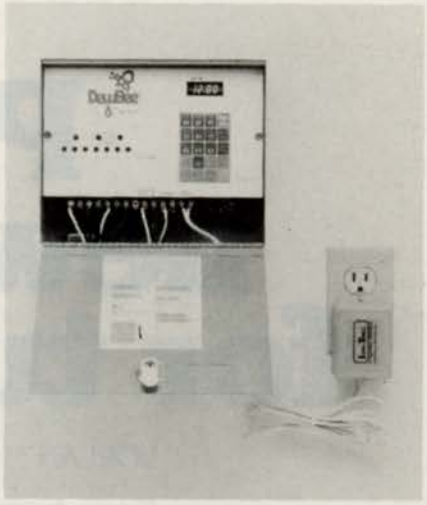
The Multi-Trac is powered by a 52 hp diesel engine and is especially suited to facilities requiring year-round maintenance such as golf courses, schools, parks, airports and sports complexes.

Circle No. 192 on Reader Inquiry Card

Irri-Trol adds residential controllers

Irri-Trol Mfg., Inc., Valencia, CA, has added six and seven station models to its DewBee automatic residential sprinkler controller line.

Joining the popular four-station



DewBee, the new DewBee 6 and DewBee 7 both feature true dual programming where two programs can run simultaneously, 14-day schedules for each program, master valve stations and LED "Station On"

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indicator lights.

Water time of the Dew Bee 6 may be set as follows: Program 1, from one minute to nine hours, 59 minutes; Program 2, from one minute to 59 minutes. Both DewBee 7 programs may be set from one minute to 59 minutes.

Circle No. 193 on Reader Inquiry Card

Rubigan EC gets experimental permit

A new fungicide for roses and ornamentals, liquid Rubigan EC in pints, is now being evaluated under an experimental use permit. Rubigan allows rose growers to produce roses free of powdery mildew damage by providing excellent preventative action with therapeutic control.

In roses and ornamentals, Rubigan is absorbed rapidly upon foliar application and moves with locally systemic action. The highly concentrated liquid EC formulation does not leave residue on leaves and can be tank mixed for control of black spot and other diseases. Rubigan alleviates worry about buildup of disease resistance because of its multi-site inhibiting action on disease organisms. Rubigan offers reduced storage and handling costs. Because it is highly active, very low rates allow less exposure to the user and the environment in comparison with other fungicides.

Rubigan is available under an experimental use permit for use on turf in treating the five major turf diseases and for the management of poa annua. For this purpose it is formulated as a 50 percent wettable powder.

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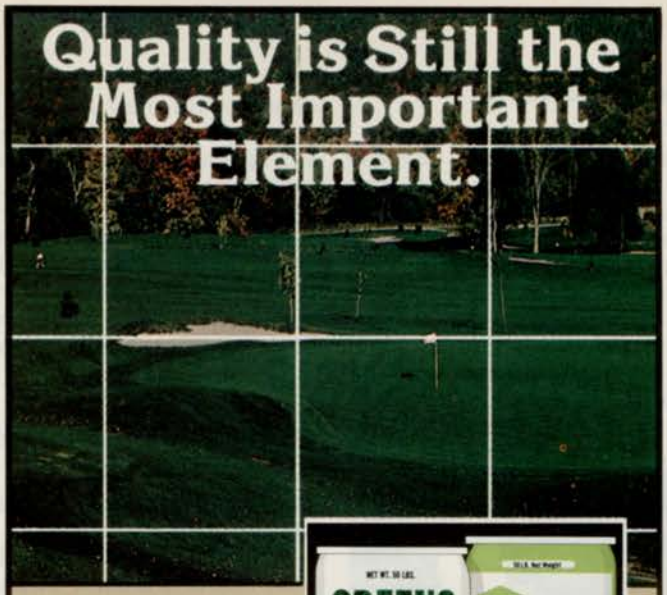

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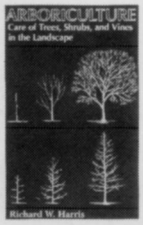

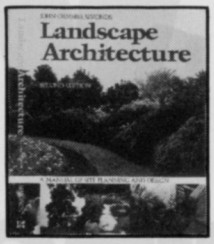

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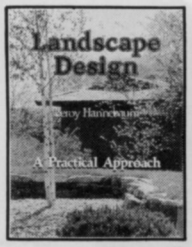

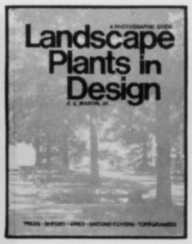

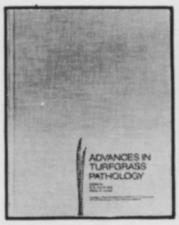

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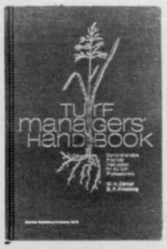

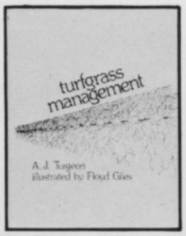

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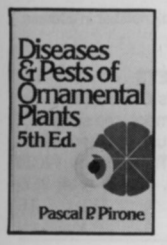

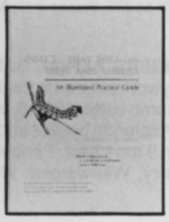

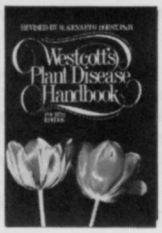

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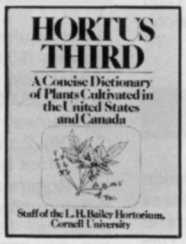

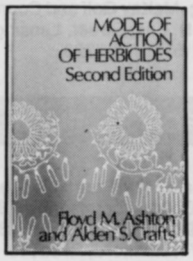

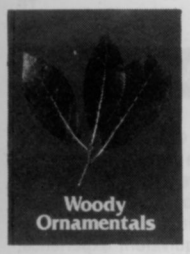

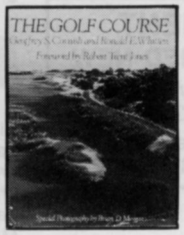

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LANDSCAPE INSTALLATION AND MAINTENANCE SALES-COMMERCIAL Well established, aggressive Washington Metro. Firm is searching for the best individuals to expand its Sales and Marketing Department. Applicants must be experienced in product knowledge as well as professional sales and service technique. Excellent salary, All resumes confidential. Advancement unlimited. Write: P.O. Box 22022, Alexandria, Virginia 22304 1/85

The City of Killeen is accepting applications for Golf Greens Superintendent. Requires Bachelor's degree in Agronomy or Horticulture or related field, and three to five years supervisory experience in golf course maintenance and repair is preferred. Starting salary $20,700 plus excellent benefit package. Send resumes to Personnel Office, City of Killeen, P.O. Box 1329, Killeen, TX 76540. 1/85

Tree and shrub care. Branch Managers and Sales Managers. America's fastest growing tree and shrub company seeking experienced, aggressive personnel for existing and expansion markets. Experience, degree and motivation key ingredients. Tremendous advancement opportunities. Excellent salary, benefits. All inquiries will be strictly confidential. Send resume, salary history to: **William Scott Carr, Tru Green Tree and Shrub Care, 2875 Northwind Drive, Suite 205, East Lansing, MI 48823.** Expand your potential with an industry leader. 3/85

Now you can buy...a HUSTLER 275 or 261 at special low prices!

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The HUSTLER 275 is economical, yet powerful for big performances...year-round! Its 23 hp gasoline engine provides the power and 20 attachments provide versatility. Dual hydrostatic drive and twin-lever, drive-wheel steering offer infinite maneuverability, maximum comfort and less operator fatigue.

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Person experienced in Sod growing operation to take responsibility of growing 800 acre production in Southern Ontario, Canada. Must be mechanically inclined. **Second position:** person fully experienced to manage sod harvesting crews. Must be capable of repairing sod equipment. Mail resume with 3 previous employers and addresses and wages expected to: Bill Johnston, P.O. Box 6163, Station F. Hamilton, Ontario, Canada L9C 5S3. 2/85

LANDSCAPE MAINTENANCE AREA MANAGER--Established Washington, DC landscape company seeks aggressive person to oversee area production and quality in our expanding maintenance division. Degree in landscape maintenance and/or related field, and experience necessary. Advancement opportunity and excellent company benefits. Please send resume to WTT Box 348. 3/85

GROUNDS MAINTENANCE SUPERVISOR-Responsible skilled work in assigning and supervising employees in the maintenance of Country Club Grounds and residential common areas. Knowledge of irrigation repair, landscaping and budgeting needed. Excellent pay and benefits. Send resume to Suntree Country Club Drive, Melbourne, FL 32935. 1/85

LANDSCAPE MAINTENANCE SALES--Positions available in sales with one of Dallas/Fort Worth's leading landscape maintenance companies. Respondents must have experience in landscape maintenance or related field and comprehensive sales background. We're looking for personable, ambitious and self-motivated people. Please send resume with salary requirements in care of WTT Box 350. 1/85

Experienced Tree Climbers for working foreman's positions with established Nassau County, Long Island, N.Y. Tree Company. Please contact "Bear Tree Service, Inc., 42 Highland Ave., Port Washington, N.Y. 11050" or call Person-to-Person collect to Mr. Ted Klumpp, (516) 944-6333. 1/85

LANDSCAPE TURF SPECIALIST-- Expanding landscape maintenance firm in Dallas area seeks experienced, knowledgeable individual licensed in ornamental pesticide applications. Serious opportunity for serious individual. Competitive salary plus benefits and bonus incentives. Send resume to include details of experience and salary requirements in care of WTT Box 351. 1/85

LANDSCAPE IRRIGATION SPECIALIST-- Several openings for individuals qualified in total irrigation repair of major systems forDallas area landscape maintenance firm. License helpful but not required. Majority of work on commercial properties. Salary commensurate with experience. Many benefits plus bonus opportunities. Send resume with complete experience background and salary requirements in care of WTT Box 352. 1/85

LANDSCAPE MAINTENANCE SUPERVISOR--Great opportunity available with large,quickly expanding firm in Dallas area. Must have landscape experience and technical knowledge in order to qualify. Excellent salary plus benefits and bonus incentive programs. Send resume describing pertinent experience and salary requirements in care of WTT Box 353. 1/85

WANTED

Wanted to buy **HYDRO SEEDER**. Please send photo. Johnson Hydro Seeding Corp., 13751 Travilah Road, Rockville, MD 20850, 301/340-0805. TF

Wanted to buy **RYAN SPIKEAIRE** in any condition. 201-472-8298. 1/85

Wanted: 18" Brouwer Sod Harvester mounted on Ford Tractor. Carolina Turf, Box 850, Raeford, NC 28376. 1/85

WANTED: Large Lindig and Royer Shredders. Lewis Equipment, 320 Third Street S.W., Winter Haven, FL 33880. (813) 294-5893. 2/85

POSITION WANTED

Chemical Lawn and Tree Care Manager — Seeks challenging management position for same in Florida. Seven years experience. Resume upon request. Write WTT Box 349. TF

MISCELLANEOUS

DIESEL HI-RANGER TOWERS—48-100 Feet working heights. Daily, weekly, monthly rentals with or without operator. MATLOCK LEASING, Pottstown, PA (215) 326-7711 or (800) 345-7711. 12/85

NEW ... HARLEY
Double Roller Landscape
POWER RAKE

PULVERIZES, LEVELS & RAKES ROCK, roots and other trash. Double Roller gives deeper penetration and allows moving of several windrows into one for faster pickup. **New scarifier.** Also ask us about Harley Rock Pickers.

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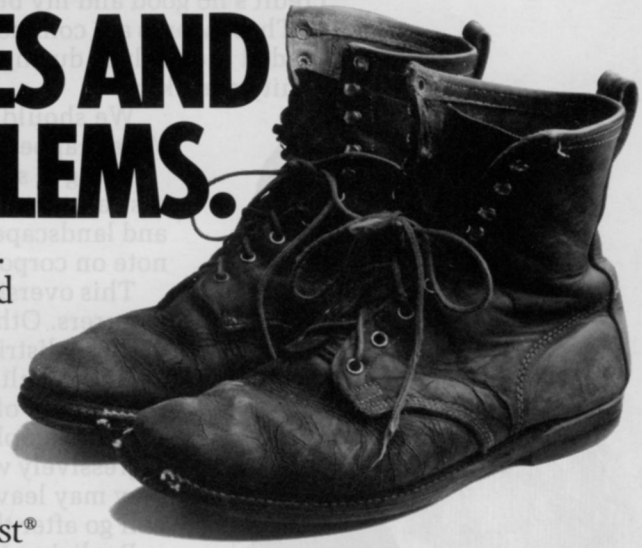
BEFORE WE DEVELOPED THESE PROBLEM-SOLVING TURFGRASS MIXTURES, WE MARCHED THROUGH ACRES AND ACRES OF PROBLEMS.



Nobody knows the troubles we've seen.

Our Northrup King turf specialists and researchers have hoofed through salt problems, soil compaction, disease, starved turf, baked turf, cleated-to-shreds turf, and dormant winter turf—all depressing sights. But it was a road well worth our travels.

The result is a complete line of Medalist® turfgrass formulas that meet the demands of the professional turf manager.

If you've been staring down at a turf problem, look up your solution here. And if you think it's a turf problem we haven't seen, just let us know.

Our business is putting your problems behind us.

MEDALIST TURF PRODUCTS ™

MEDALIST TURF PRODUCT	MAJOR AREAS OF USE	SPECIAL FEATURES
Athletic Pro and Athletic Pro II	For athletic turf.	Well suited for new seeding or overseeding. Fast establishing, traffic tolerant, rapid recovery. Both provide good footing.
Boulevard Mix	Any area with high pH (roadsides, sidewalks, boulevards, alkaline soils, etc.).	Contains 'Fults' and Dawson red fescue for beautiful salt-tolerant turf. Performs at low to high fertility levels.
Landscape Pro Mix	School grounds, cemeteries, golf course roughs, home lawns.	Establishes fast. Adapts to broad range of conditions and management levels. Low to moderate fertility needs.
Overseeder II Mix	Fairways, tees, athletic fields.	Rapid germination and establishment. Withstands heavy traffic and resists diseases. Penetrates compacted soils.
Medalist North Mix	Fairways, tees, cart paths, wear areas.	Quality turf for high traffic areas. Clean mowing and disease resistant.
Premium Sod Blend	Commercial sod production.	Exceptional dark green color. Tolerates light shade. Superior disease resistance. Rapid sod producer.
Renovator Pro Mix	Problem solver for heavy traffic areas (athletic fields, golf tees, and fairways).	Penetrates compacted soils and combats *Poa annua.* Adaptable to most geographic regions.
Medalist Brand Overseeding Products	Winter overseeding of dormant bermudagrass.	Establishes rapidly and evenly. Tolerates traffic while providing a superior putting surface. Smooth spring transition.

Ask your Northrup King distributor about Medalist Turf Products to solve your turf problems. Or write Northrup King Medalist Turf Products, P.O. Box 959, Minneapolis, MN 55440.

Circle No. 139 on Reader Inquiry Card

What do ya mean my credit's no good?

"I've been buying supplies from you and your dad for years. Now you tell me my credit's no good and my business isn't worth taking a risk on."

These words are common today in agriculture as small farmers, who overextended themselves during the late 70s, find their payments too high and their equity shrinking.

We should never forget how closely tied we are to agriculture. What happens in agriculture will impact us no matter what we do.

Being a stepchild to agriculture has been considered more a restraint than a benefit. Agricultural manufacturers still lump golf and landscape sales into what they term 'specialties', using a footnote on corporate reports to list the specialty markets.

This oversight has been recognized by a few progressive manufacturers. Others are being forced to adapt to 'specialties' as agricultural distribution is put to the test by changes in ag purchasing.

As a result, our lines of supply are going to change during the second half of this decade.

For example, Deere and Ford dealers will start competing more aggressively with current landscape equipment dealers. Although, they may leave golf equipment up to current manufacturers, they will go after the lawn care and landscape maintenance markets.

Realizing this, landscape distributors have already started to fight back. Storr Tractor, a New Jersey Toro distributor, added 35 local dealers in the New York metropolitan area to uncover landscape buyers using homeowner and agricultural equipment. It's working says Storr's Harold Block.

The short-line equipment dealer, on the other hand, may not be able to fight off the challenge of both the ag and major landscape equipment distributors.

The chemical distribution business faces the largest overhaul. Manufacturers are reorganizing specialty chemical sales. They have identified the big buyers in the landscape market and are tempted to go direct. At the same time they'd like to leave landscape and golf sales entirely up to large regional distributors. Realizing this, the big regionals are pushing hard and cutting prices to increase their share.

The local chemical distributor's markup keeps shrinking. His incentive to stay in business is drying up. He may be the first one in the Green Industries to hear the cold words, "I'm sorry, your business isn't worth the risk anymore."

1985 begins a critical period for many landscape distributors. It's worth our closest attention. Therefore, Weeds Trees & Turf is calling 1985 'The Year of the Distributor'.

You'll want to read our expanded distributor coverage this year. It is designed to keep you informed so you can plan your purchasing with confidence.

Bruce F. Shank

By Bruce F. Shank, executive editor

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Put down the *Poa annua* seedhead uprising before it starts. Spray Embark® PGR.

Tame *Poa annua* while it's young. Or it will grow to become a rebellious turfgrass, producing stiff seedheads that don't mow well, turning fairways oyster-white or a pale yellow, discoloring shoes, irritating allergies and generally making golfers uneasy. Not to mention course directors.

However, a little Embark® PGR (Plant Growth Regulator) applied early in the growing season will keep *Poa* in its place.

Just one-half pint per acre arrests

Poa seedhead development. And by preventing seedheads, root systems are strengthened, summer vigor is increased, summer color is enhanced and early discoloration is minimized.

The result is a uniform, dense, attractive and long-lasting playing surface.

Embark PGR also controls the growth of other grasses. Use it to reduce mowing frequency on slopes, around trees and creeks, and other hard-to-maintain areas. Saves manhours and wear on mowing equipment.

For more information, contact Agricultural Products/3M, 223-1N, 3M Center, St. Paul, MN 55144. Or see your local 3M Embark PGR distributor.

3M Hears You...

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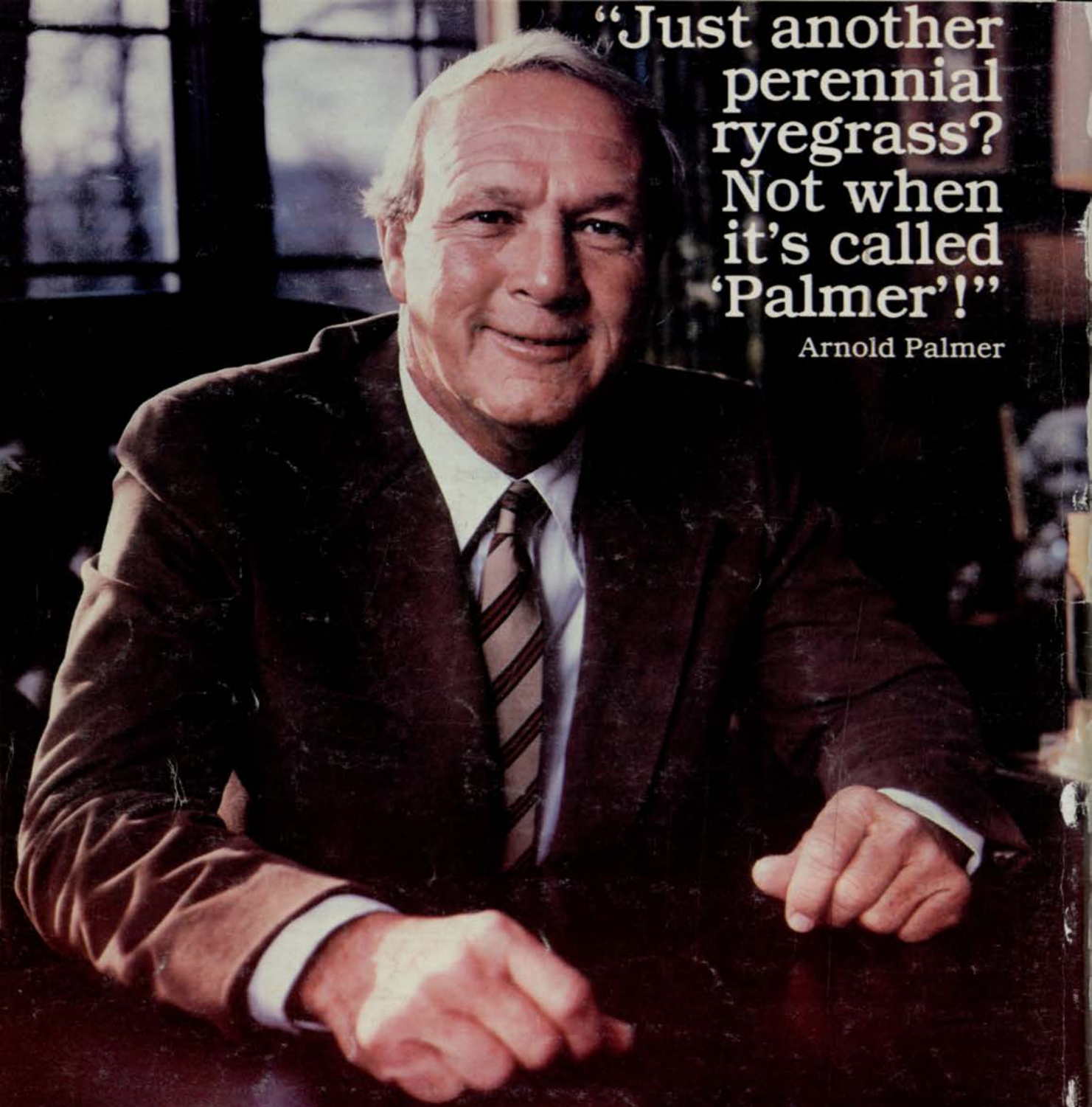
3M



"If a ryegrass is going to be named Palmer, it would have to be very special. And believe me this one is.

"As you know, I'm a golf course owner and I'm involved in golf course design and construction with the Palmer Course Design Company. That makes me very critical of turfgrass. Let me tell you some of the qualities we're finding in this variety. First of all, whether used in the North or South, Palmer shows excellent heat and drought tolerance and exceptional resistance to brown patch and leaf spot. Secondly, it establishes very quickly. In no time flat you can have a cover of fine-leafed, attractive, dark green turf. When it comes to mowing, it cuts neat and clean. That makes it look good and play well. In fact, some of the best turf I've played on lately has been seeded with Palmer ryegrass.

"Just check the latest university test results and compare other perennial ryegrasses to Palmer . . . it's a winner."

Whether you're seeding a golf course, athletic field, cemetery or home lawn, you can expect the same performance Palmer ryegrass is giving on golf courses like Harbour Town at Hilton Head, The Tournament Players Club and Bay Hill in Florida or Ironwood in California where it's a big part of the overseeding programs.

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